GOVERNMENT OF ANDHRA PRADESH

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Web Site : https://tender.apeprocurement.gov.in

TENDER DOCUMENT

FOR

Procurement and supply of Turnkey, Laboratory Equipment, Office furniture and other items for Food Laboratory Visakhapatnam, Guntur & Tirupati in Andhra Pradesh (Comprehensive Mode) (e- Procurement) (Reverse Tender)

Tender Notice No. : **9.1A/APMSIDC/2023-24 Dt: 06.02.2024.**

Name of the Agency and Address : ……

……

……

Implementing Agency :

ANDHRA PRADESH MEDICAL SERVICES & INFRASTRUCTURE DEVELOPMENT CORPORATION

(Formerly APHMHIDC)

(AN ENTERPRISE OF GOVT. OF A.P.)

2nd Floor, Plot No:09, survey number: 49, IT Park, Mangalagiri, Guntur District- 522503.

e-mail: - aphmhidc@gmail.com & ed.apmsidc16@gmail.com

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INTRODUCTION

1.1. The Andhra Pradesh Medical Services & Infrastructure Development Corporation – APMSIDC (formerly APHMHIDC) (Tender Inviting Authority) is a fully owned Government of Andhra Pradesh for providing services to the various health care institutions under the Department of Family Welfare and Health. One of the key objectives of the APMSIDC is to act as the central procurement agency for all essential drugs and equipments for all health care institutions (hereinafter referred to as user institutions) under the department. The corporation has also been entrusted with the setting up and running of all kinds of modern Medical and Paramedical or medical based ancillary facilities such as hospitals, pathological labs, diagnostic centres, x-ray/scanning facilities.

1.2. Over the last decades, several equipments have been procured and installed in the various health care institutions under the government under different schemes. One of the major problems encountered is the maintenance of the equipments. Site preparation, timely replacement of consumables, calibration of sensitive equipments, up gradation of technology, training to the doctors and paramedical staff- all poses problems. The corporation has been formed by the government to fill in these grey areas and to act as total service providers to the all the government health care institutions. Of course, this mammoth task could be achieved only with the active involvement and support of the manufacturers/dealers of the equipments.

1.3. In this tender, the lowest price is the sole criteria for selecting the equipment/supplier. The two-bid system, which is followed, has been designed to eliminate those equipments which do not match the technical specifications, or not having the proven technology and to eliminate firms that do not have the financial or technical capability to supply, install and maintain the equipments. i.e., to provide after sales support for a period of minimum 5 years from the date of installation and to ensure 98 % uptime in performance/operation of the equipment.

1.4. The payment to the successful tenders will be settled after obtaining a 'three month performance certificate' from the head of the user institution - three month period is a period of trail run- during which the performance of the equipments will be keenly observed. At the same time, it may be noted that the Corporation is not the agency finalizing the requirements of equipments and their technical specifications. These parameters are finalized by the user institutions and funding agencies and forwarded to the corporation for procurement. On our side, we ensure that the technical specifications are not biased towards a particular equipment/firm, through consultations during the pre-tender meetings with the prospective tenderers. Amendments in the terms and conditions of the tender documents may be resorted to on the basis of expert advice to see that more than one firm qualifies for the final round. Technology specific specifications/conditions and entertaining direct purchase will be undertaken, if and only if, the user agency certifies the equipment required is of proprietary nature. Since the equipments procured are dealing with precious human life in government hospitals, depended by the poor and downtrodden of the society, it is our endeavor to ensure that

most modern, but proven and durable equipments are procured and supplied. The tender documents are prepared after assessing the market to meet such objectives.

1.5. Every paisa spend by the corporation is public money and hence accountable. Therefore, after sales service and up-time guarantee on the performance of the equipment purchased by the Corporation have to be given paramount importance. Corporation will be dealing with defaulters in these fronts with a firm hand, which may lead to black listing and recovery of damages. We request our valuable suppliers to avoid such unpleasant situations.

1.6. It is also essential while dealing with public money that utmost transparency has to be maintained in the procurements of the corporation. All decisions will be published from time to time on our website www.msidc.ap.nic.in. The corporation will not wait for the mandatory 30 days period to provide any information under Right to Information Act and will provide the information within the minimum possible time. The Corporation will uphold the fundamental "right to be heard' enshrined under the Constitution of India and will take harsh decisions only after providing opportunity for hearing/submission of facts. Tenderers could prefer appeal to the government against all decisions of the corporation.

SECTION - I: INVITATION FOR BIDS (IFB)

GOVERNMENT OF ANDHRA PRADESH

ANDHRA PRADESH MEDICAL SERVICES & INFRASTRUCTURE DEVELOPMENT CORPORATION (APMSIDC)

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Tender Notice No. 9.1A/APMSIDC/2023-24 Dt: 06.02.2024.

1. Bids are invited on the e-procurement platform for certain medical equipment as described in the Section V- Schedule of Requirements from the eligible manufacturers/Authorized Distributors. The details of bidding conditions and other terms can be downloaded from the electronic procurement platform of Government of Andhra Pradesh i.e. https://tender.apeprocurement.gov.in.

2. Bidders would be required to register on the e-Procurement market place "www.eprocurement.gov.in" and submit their bids online. On registration with the e-Procurement market place they will be provided with a user id and password by the system through which they can submit their bids online.

3. The bidders need to scan and upload the required documents as per the Check list given in **Annexure XIV**. Such uploaded documents pertaining to technical bid need to be attached to the tender while submitting the bids on line. The attested copies of all these uploaded documents of technical bid, signed undertaking of tenderer should be submitted off line to Managing Director, APMSIDC, Mangalagiri, Guntur on or before the next day of the last date of submission of bids. The Corporation will consider only the bids submitted through on-line over the copies of the paper based bids.

4. a) The participating bidder/s will have to pay tender processing fee (non-refundable) for the amounts specified in the Schedule of Requirements (Section –V), in the form of online only.

   b) Further the bidder/s shall furnish, as part of it bid, the Bid security for the amounts specified in the Schedule of Requirements (Section –V) to be paid in the form of crossed Demand Draft drawn in favour of Managing Director, APMSIDC, Guntur along with bids. The bidders should note that the local MSME units are exempted from payment of E.M.D, subject to the production of necessary documentation to that extent by them.

   c) Further all the participating bidders have to electronically pay a non-refundable transaction fee to M/s. APTS, the service provider through "Payment Gateway Service on E-Procurement platform", as per the Government Orders placed on the e-procurement website.

   d) APMSIDC will not accept the tenders from blacklisted companies or undependable Suppliers whose past performance with APMSIDC was found poor due to delayed and/or erratic supplies and those with frequent product failures, and also against whom there have been adverse reports of **Sub-Standard Quality / Poor Service of** Equipment supplies, as defined in the other parts of the Bidding document.

   e) "Complaint/s: Any complaints/representation regarding tender will be entertained only after depositing of Rs. 25,000/- in form of Demand Draft in the name of Managing director, APMSIDC, Mangalagiri, Guntur. Subsequently necessary action will be taken by the Managing Director and decision of Managing Director will be binding

upon the complainant. If the complaint turns out to the false or invalid the amount will be forfeited. The amount shall be refunded if after scrutiny the complaint is found to be true. No further complaint/representation from the same complainant for the same tender will be entertained. If the complaint or allegation made is found to be false or baseless and without any valid point, the tender inviting authority in its discretion, can prevent / blacklist / declare ineligible, such bidder from participating in its procurement process, either indefinitely or for a stated period of time."

5. **Period of Delivery: 120** Days from the date of receipt of the Notification of Award (Purchase Order) of Contract. The delivery terms include the total time given for supply, installation, testing and training of staff.

Time Limits prescribed

Sl. No	Activity	Time Limit
5.1.1.	Installation & Delivery period	120 days from date of issuance of Supply Order
5.1.2.	Comprehensive warranty period	as specified at section V schedule of requirements against each equipment.
5.1.3.	Frequency of visits to all User Institution concerned during Warranty	One visit every three months (4 visits in a year) for periodic/preventive maintenance and any time for attending repairs/break down calls.
5.1.4	Submission of Performance Security and entering into contract	15 days from the date of issuance of Supply Order
5.1.5	Payment Installments of Price of equipments and ratio	Three Installments and in the ratio 60:30:10
5.1.6	Time for making payments by Tender Inviting Authority	Within 60 days from the date of submission of proper documents
5.1.7.	Maximum time to attend any Repair call	*Within 48 hours*
5.1.8	Uptime in a year	*95%*

6. **Bidders eligibility and qualifications: Defined at Clause 13 of Instructions to Bidders (Section II) and Qualification Criteria (Section-VI)**

7. **Details of Tender Process:**

1.	Downloading of documents	from 21-02-2024 to 06-03-2024 up to 02.59 PM
2.	Pre bid meeting	27-02-2024 @ 11.00 AM
3.	Due date for Receipt of tenders	06-03-2024 up to 3.00 P.M
4.	Time and date of opening of technical Bids	06-03-2024 @ 3.01 PM
5.	Time and date of opening of financial bids	06-03-2024 @ 5.00 PM

Note: The dates stipulated above are firm and under no circumstances they will be relaxed unless otherwise extended by an official notification or happen to be Public Holidays. For the assistance in the online submission issues, the bidder may contact the help desk of M/s Vupadhi Techno Services Pvt. Ltd. (e-procurement) at their e-mail address: eprocsupport@vupadhi.com or on the mobile nos. **8645-246370 / 71 / 72 / 73 / 74**

8. Procedure for Bid Submission

a. The Tenderers/Bidders who are desirous of participating in e-procurement shall submit their Technical bids, price bids etc., in the Standard formats prescribed in the Tender documents, displayed at e-procurement market place.

b. The bidders shall sign on all the statements, documents, certificates, uploaded by them, owning responsibility for their correctness / authenticity.

c. The hard copies of all the uploaded Technical / Price bid, to be attested by a Gazetted Officer or properly notarized.

d. The Corporation shall not hold any risk on account of postal delay. Similarly, if any of the certificates, documents, etc., furnished by the tenderer are found to be false / fabricated / bogus, the bidder will be disqualified, blacklisted, action will be initiated as deemed fit and the EMD will be forfeited.

e. The Corporation will not hold any risk and responsibility for the loss in transit during uploading of the scanned document, for the invisibility of the scanned document online, and any other problem(s) encountered by the Tenderers while submitting his bids online.

9. Important Instructions to the Bidders:

9.1 Quality of Supplied Equipment throughout its life cycle period, timely supplies and prompt maintenance support during the warranty and CMC period without default are being given paramount importance by the Corporation. The Corporation will be dealing with the defaulters with firm hand, which may lead to blacklisting for a specified period in addition to levying penalties.

9.2 In case of complaints on the quality and poor maintenance support of the products supplied, bills will be withheld till receipt of Satisfactory reports. Further:

- If one item of any Supplier is found of ‘Sub-Standard Quality’ during the Contract period, then that particular item will be blacklisted for a period of (3) three years immediately succeeding the Contract year
- If two items of any Supplier are found of ‘Sub-standard Quality’ during the Contract period, then Supplier will be blacklisted for a period of (3) three years immediately succeeding the Contract year

9.3 The Corporation will blacklist the Supplier, who is declared as ‘Undependable for two (2) items or in two (2) instances during the Contract period, for a period of one year immediately succeeding the Contract year apart from taking other penal actions under the Contract.

9.4 The decision of the Managing Director, APMSIDC, or any officer authorized by him in respect of the quality of the supplied Equipment and other goods etc., shall be final and binding.

9.5 No claims shall be allowed against the APMSIDC in respect of interest on Earnest Money Deposit or on Security Deposit or late payments.

9.6 Savings Clause: No suit, prosecution or any legal proceedings shall lie against APMSIDC or any person for anything, which is done in good faith or intended to be done in pursuance of bid.

10. Reverse tendering process on e-procurement portal

a) APMSIDC will schedule reverse tendering process on the e-Procurement portal for each item. Qualified technical bidders will also be communicated through e-mail the date and time for the conduct of reverse tendering process.

b) Online reverse tendering process

i) The online Reverse tendering process will be run on the amount quoted against the item.

ii) Only the technically qualified bidders will be permitted to participate in the reverse tendering.

iii) The 'opening price' i.e. start price for Reverse tendering will be the lowest (L1) price quoted by the Bidders amongst all technically qualified bidders.

iv) Bidders can modify the total price, based on the minimum bid decrement or the multiples thereof, to displace a standing lowest bid and become "L1", and this will continue as an iterative process. The total price, will be used to determine the total cost of the bid.

v) For the purpose of Reverse tendering, the minimum bid decrement will be given at the time of reverse tendering.

vi) Reverse tendering duration: The duration of the reverse tendering is 3 Hours. All bidders are required to submit their online bids during this period.

vii) In case, if any bidder decides to lower the price in the last fifteen (15) minutes of the reverse tendering duration, then the duration of the reverse tender will be extended for additional 15 minutes (Bid Received time + 15 minutes) to enable other bidders to participate further. Such extensions will continue as long as there is no bid received in the last 15 minutes.

viii) After the completion of reverse tendering, the system will calculate the total price of the bid.

SECTION - II : INSTRUCTIONS TO BIDDERS

TABLE OF CLAUSES

A. Introduction

1. Source of funds:

The funds are made available by the State Government of Andhra Pradesh, to the Managing Director, APMSIDC Scheme wise towards the procurement processed under this tender notification.

2**. Eligible Bidder**

2.1 This invitation for Bids is open to all Manufacturers or their authorized distributors, who fulfill the eligibility criteria mentioned in the Clause 13 and who meet qualification criteria mentioned in the Section VI.

3 Eligible Goods and services

3.1 All goods and ancillary services to be supplied under the contract shall have their origin in eligible source country. The goods shall meet the requirements as specified in the Technical Specifications. And meet the eligibility criteria as given at Clause 14 of ITB.

3.2. For purpose of this clause, "origin" means the place where the goods are mined, grown, or produced or from which the ancillary services are supplied. Goods are produced, through manufacturing processing or substantial and major assembling of components, a commercially recognized product results that is substantially different in basic characteristics or in purpose or utility from its components.

3.3 The origin of goods and services is distinct from the nationality of the Bidder.

4. Cost of bidding.

4.1 The Bidder shall bear all costs associated with the preparation and submission of its bid, and the Managing Director, APMSIDC, Mangalagiri, Guntur here in after referred to as " the purchaser", will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

B. The Bidding Documents

5. Content of Bidding Documents

5.1 In addition to the Invitation for Bids, the bidding documents include:

(a) Instruction to Bidders;
(b) General conditions of contract;
(c) Special conditions of contract;
(d) Schedule of requirements;

(e) Technical specifications;
(f) Bid form and price schedules;
(g) Bid security form;
(h) Performance security form.
(i) Firm Registration/manufacturer license
(j) Performance statement form.
(k) Declaration Form
(l) Check List of the documents uploaded on e-platform as part of the bid

5.2 The bidder is expected to examine all instructions, forms, terms and specifications in the bidding documents. Failure to furnish all information required by the bidding documents or submission of a bid not substantially responsive to the bidding documents in every respect will be at the bidders risk and may result in rejection of its bid.

6. Clarification of bidding documents

6.1 A prospective Bidder requiring any clarification of the bidding documents may notify the purchaser in writing at the purchasers mailing address indicated in the Invitation for bids. The purchaser will respond in writing to any request for clarification of the Bidding documents if the same is received in the first week of the tender notice prescribed by the purchaser. Written copies of the purchaser's response (including an explanation of the query but without identifying the source or inquiry) will be sent to all prospective bidders which have received the bidding documents.

7. Amendment of bidding documents

7.1 At any time prior to the deadline for submission of bids, the purchaser may, for any reason, whether at its own initiative or in response to a clarification requested by prospective bidder, modify the bidding documents by amendment.

7.2 The amendment will be notified online.

7.3 In order to afford prospective Bidders reasonable time in which to take the amendment into account in preparing their bid, the purchaser may, at its discretion, extend the deadline for the submission of bids.

C. Preparation of Bids

8. Language of Bid.

8.1. The Bid prepared by the Bidder and all correspondence and documents relating to the bid exchanged by the bidder and the purchaser, shall be written in the English language, provided that any printed literature furnished by the Bidder may be written in another language so long as accompanied by an English translation of its pertinent passages in which case, for purposes of interpretation of the bid, the English translation shall govern.

9. Documents comprising the bid

9.1 The bid prepared by the bidder shall comprise the following components:

1. Technical Bid:
(a) A Bid form completed in accordance with clause 10

(b) Documentary evidence established in accordance with clause 13 that the bidder is eligible to bid and is qualified to perform the contract if its bid is accepted.
(c) Documentary evidence established in accordance with clause 14 that the goods and ancillary services to be supplied by the Bidder are eligible goods and services confirm to the Bidding Documents; and
(d) Bid security furnished in accordance with clause 15.

2. The Price Bid completed in accordance with clauses 11 and 12.

10. Bid Form

10.1 The Bidder shall complete the bid form provided in the Bidding documents, indicating for the goods to be supplied, brief description of the goods, their country of origin and quantity and other declaration statements.

11. Bid prices.

11.1 The Bidder shall indicate on the appropriate price schedule, made available in the e-procurement platform and a model format is also attached to these documents, the unit prices and total bid prices of the goods it proposes to supply under the contract, for each item separately. The unit prices shall be rounded off to nearest Indian rupee. The bidder may quote one or more items for which copy of necessary documents, wherever necessary have to be produced along with the bid.

11.2. Prices indicated on the price schedule shall be entered separately in the following manner:
(i) The price of the goods, quoted ex-factory, ex-showroom, ex-warehouse, or off-the-shelf, or delivered, as applicable, including all duties and sales and other taxes including transportation, installation, commissioning at site and all incidental charges associated with the contract.
(ii) Cost of 5 years Comprehensive Maintenance Contract as defined in the Clause 18 of the Special Conditions of the Contract.

11.3 The Bidder's separation of the price components in accordance with para 11.2 above will be solely for the purpose of facilitating the comparison of bids by the purchaser and will not in any way limit the purchaser's right to contract on any of the terms offered.

11.4 Fixed Price. Price quoted by the Bidder shall be fixed during the Bidder's performance of the contract and not subject to variation except for any changes made by the Statute in respect of local taxes. A bid submitted with an adjustable price quotation will be treated as non-responsive and rejected, pursuant to clause 24.

12. Bid currencies.

12.1 Prices shall be quoted in Indian Rupees; Bids quoted other than Indian currency will be rejected.

13. Documents Establishing Bidder's Eligibility and Qualifications.

13.1 Pursuant to clause 9, the bidder shall furnish, as part of its bid, documents establishing the bidder’s eligibility to bid and its qualifications to perform the contract if its bid is accepted

13.2 The documentary evidence of the Bidder's eligibility to bid shall establish to the purchaser's satisfaction that the bidder, at the time of submission of the bid, is an eligible bidder as defined under clause 2.

13.3 The documentary evidence of the Bidders qualifications to perform the contract if its bid is accepted, shall establish to the purchaser satisfaction;

(a) That, in the case of bidder offering to supply goods under the contract which the bidder is manufacture produce, Firm Registration/manufacturer license that the bidder is manufacturer & also Memorandum of Articles. or otherwise produce, the bidder has been duly authorized (as per authorization form in section XII a).

(b) that, in the case of bidder offering to supply goods under the contract which the bidder did not manufacture or otherwise produce, the bidder has been duly authorized (as per authorization form in section XII b) by the goods manufacturer or producer to supply the goods in India.

(i) the legal status, place of registration and principle place of business of the company or firm or partnership etc.
(ii) Details of experience and past performance of the bidder on specified item offered in the bid within the past three years and details of current contracts in hand and other commitments (suggested proforma given in section XI);
(iii) Copy of the GST Certificate and Details of IT Returns- PAN / TIN copies
(iv) The details in compliance to the Qualification Criteria (Section VI).

13.4 The check list for the details of documents to be submitted is given at Annexure XIV

14. Documents Establishing Goods Eligibility and conformity to bidding documents.

14.1 Pursuant to clause 9 the bidder shall furnish, as part of its bid, documents establishing the eligibility and conformity to the bidding document of all goods and services which the bidder proposes to supply under the contract.

14.2 The documentary evidence of the goods and services eligibility shall consist and of statement in the price schedule on the country of origin of the goods and services offered which shall be confirmed by a certificate of origin at the time of shipment.

14.3 The documentary evidence of the goods and services conformity to the bidding documents may be in the form of literature, drawings and data, and shall furnish:

(a) A detailed description of the goods essential technical and performance characteristics of the goods.
(b) A clause by clause commentary on the purchaser technical specifications demonstrating the goods and services substantial responsiveness to those specifications or statement of deviations and exceptions of the Technical specifications.

14.4 For purpose of the commentary to be furnished pursuant to clause 14.3 above, the bidder shall note that standards for workmanship, material and goods, and references to brand names or catalogue numbers designated by the purchaser in its technical specifications are intended to be descriptive only and not restrictive. The bidder may substitute alternative standards, brand name and / or catalogue numbers in its bid, provided that it demonstrates to the purchasers satisfaction that the substitutes are substantially equivalent or superior to those designated in the Technical specifications.

15. Bid security

15.1 Pursuant to Clause 9, the Bidder shall furnish, as part of it bid, the Bid security for the amounts specified in the Invitation for Bids (Section -1)

15.2 The bid security is required to protect the purchaser against risk of bidders conduct which would warrant the security forfeiture, pursuant to clause 15.7

15.3 The bid security shall be in Indian Rupees and shall be in online only.

15.4 Any bid not secured in accordance with para 15.1 and 15.3 above will be rejected by the purchaser as non-responsive pursuant to clause 24.

15.5 Unsuccessful Bidder's bid security will be discharged/ returned as promptly as possible but not later than 30 days after the expiration of the period of bid validity prescribed by the purchaser pursuant to clause 16.

15.6 The successful Bidder's bid security will be discharged upon the Bidders executing the contract, pursuant to clause 34 and furnishing the performance security pursuant to clause 35.

15.7 The bid security may be forfeited;

(a) If a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Bid form; or

(b) In case of successful Bidder, if the Bidder fails;

(i) to sign the contract in accordance with clause 34; or

(ii) to furnish performance security in accordance with clause 35.

(c) If the Bidder does not accept the corrected amount the Bid will be rejected, and the Bid security may be forfeited.

16. Period of validity of Bids.

16.1 Bids shall remain valid for 90 days after the date of bid opening prescribed by the purchaser pursuant to Clause 19.1. A bid valid for shorter period may be rejected by the purchaser as non-responsive.

16.2 In exceptional circumstances, the Purchaser may solicit the Bidders consent to an extension of the period of validity the request and the responses thereto shall be made in writing (or by mail). The bid security provided under clause 15 shall also be suitably extended. A bidder may refuse the request without forfeiting its bid security.

17. Format and signing of Bid.

17.1 The bid shall be typed or written in indelible ink and shall be signed by the Bidder or a person or persons duly authorized to bind the bidder to the contract. The latter authorization shall be indicated by written power-of-attorney accompanying the bid. All

pages of the bid, except for unammended printed literature, shall be initialed by the person or persons signing the bid.

17.2 The bid shall contain no interlineations, erasures or overwriting except as necessary to correct errors and made by the bidder in which case such corrections shall be initialed by the person or persons signing the bid.

D. Submission of Bids

18. Sealing and Marking of bids.

18.1 The bids shall be uploaded (submitted) electronically, as described in the Invitation for Bids (Section –I). The hard copies of the bids in sealed covers must be received by the Purchaser at the address specified above on or before the due date of submission of bids (Section –I).

18.2 The Bids shall be addressed to the purchaser at the following address:

The Managing Director, APMSIDC, 2nd Floor, Plot No:09, survey number: 49, IT Park, Mangalagiri, Guntur District- 522503**.**

18.3 The Bids shall bear the name of the invitation for bids (IFB) and Number and also the words "Do not open before 15.00 Hrs **on 06-03-2024**. The envelopes shall indicate the name and address of the Bidder to enable the bid to be returned unopened in case it declared “late".

18.4 If the envelope is not sealed and marked as required by Para 18.2 and 18.3 above, the purchaser will assume no responsibility for the bids misplacement or premature opening.

19. Deadline, for submission of bids.

19.1 The Bids (both electronic and Hard copies) must be received by the purchaser, no later than the time and date specified in the Invitation for Bids (Section I). In the event of the specified date for the submission of Bids being declared a holiday for the purchaser, the Bids will be received up to the appointed time on the next working day.

19.2 The purchaser may, at its discretion, extend this deadline for submission of bids by amending the bid documents in accordance with clause 7, in which case all rights and obligations of the purchaser and bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

20. Late Bids.

20.1 Any bid received by the purchaser after the deadline for submission of bids prescribed by the purchaser, pursuant to clause 19, will be rejected and/ or returned unopened to the Bidder.

21. Modification and Withdrawal of Bids.

21.1 No bid may be modified subsequent to the deadline for submission of bids.

21.2 No bid may be withdrawn in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Bid form. Withdrawal of bid during this interval may result in the Bidders forfeiture of its bid security , pursuant to Clause 15.7

E. Bid Opening and Evaluation

22. Opening of Bids by Purchaser

22.1 The Purchaser/or his authorized representative will download the technical bids on **06-03-2024** at 3.01 PM.

22.2 The Financial Bids of the Technically responsive bidder would be downloaded subsequently from the e-platform, once the technical evaluation is completed.

23. Clarification of Bids.

23.1 To assist in the examination, evaluation and comparison of bids the purchaser may at his discretion, ask the Bidder for clarification of his bid. The request for clarification and the response shall be in writing and no change in price or substance of the bid shall be sought, offered or permitted.

24. Technical Evaluation (Preliminary Examination and Pre-Qualification)

24.1 The purchaser will examine the bids to determine whether they are complete, whether required securities have been furnished, whether the documents have been properly signed, and whether the bids are generally in order.

24.2 Prior to the financial evaluation, pursuant to clause 26, the purchaser will determine the responsiveness of each bid to the bidding documents. For purposes of these clauses, a responsive bid is one which conforms to all the terms and conditions of the bidding documents without material deviations. The purchaser's determination of bids responsiveness is to be based on the contents of the bid itself without recourse to extrinsic evidence.

24.3 Further the purchaser will determine to his satisfaction whether the Bidder is qualified to satisfactorily perform the contract. The determination will take into account the Bidder's financial, technical and production capabilities. It will be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder pursuant to clause 13 as well as such other information as the purchaser deems necessary and appropriate.

24.4 An affirmative determination will be prerequisite for the opening of the financial bids. A negative determination will result in rejection of the Bidder's bid.

24.5 A bid determined as not substantially responsive will be rejected by the purchaser.

24.6 The Purchaser may waive any minor informality or non-conformity or irregularity in a bid which does not constitute a material deviation, provided such a waiver does not prejudice or affect the relative ranking of any bidder.

24.7 The Preliminary Evaluations of the bidders are kept available at APMSIDC website http://msidc.ap.nic.in

25. Deleted.

26. Evaluation and comparison of Bids.

26.1 The Purchaser will evaluate and compare bids previously determined to be substantially responsive, pursuant to clause 24 for each schedule separately.

26.2 The purchasers evaluation of a bid will take into account; in addition to the bid price (ex-factory/ex-warehouse/off-the-shelf price of the goods offered from within India, such price to include all costs as well as duties and taxes paid or payable on components and raw material incorporated or to be incorporated in the goods, on the finished goods and cost of incidental services required. The following costs to the extent specified:

a. cost of inland transportation, insurance and other costs within India incidental to the delivery of goods to their final destination;
b. The comprehensive annual maintenance charges (inclusive of four Preventive Maintenance visits and all distress calls in a year and costs of all spares required during the repairs) for a period mentioned against equipment at section V- (Schedule of requirements) subsequent to free guarantee maintenance period mentioned against equipment at section V- (Schedule of requirements).
c. the availability in India (Preferably in Andhra Pradesh) of spare parts and after-sales services for the equipment offered in the bid. To this extent the bidders shall give:

- An undertaking for the uninterrupted supply of adequate spares for at least a period of 7 years shall be furnished.
- An Undertaking Availability/ establishment of after sales service facility at least in (1) region of Andhra Pradesh to ensure uninterrupted after sales service during warranty period shall be confirmed. The details of service facility available / proposed to be set up shall be furnished with their bid.

27. Deleted

28. Contacting the purchaser.

28.1 Subject to clause 23, no Bidder shall contact the purchaser on any matter relating to the bid, from the time of the bid opening to the time, the contract is awarded.

28.2 Any effort by a Bidder to influence the Purchaser in the purchaser's bid evaluation, bid comparison or contract award decisions may result in rejection of the Bidders bid.

F. Award of Contract

29. Post - Qualification

Not Applicable

30. Award Criteria

30.1 Subject to clause 32, the purchaser will award the contract to the successful Bidder whose bid has been determined to be substantially responsive and has been determined as the lowest evaluated bid, provided further that the Bidder is determined to be qualified to perform the contract satisfactorily.

31. Purchaser’s right to vary quantities at Time of Award

31.1 The purchaser reserves the right, at the time of award of contract to increase or decrease to any extent of the quantity of goods and services specified in the schedule of requirements without any change in price or other terms and conditions.

32. Purchaser's right to accept any Bid and to reject any or all Bids.

32.1 The purchaser reserves the right to accept or reject any bid and to annul the bidding process and reject all bids at any time prior to award of contract, without there by incurring any liabilities to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Purchaser's action.

33. Notification of Award.

33.1 Prior to the expiry of the period of the bid validity, the purchaser will notify the successful Bidder in writing by registered letter or cable or telex, duly confirming that the bid has been accepted.

33.2 The notification of award will constitute the formation of the contract.

33.3 Upon the successful Bidder's furnishing of performance security, pursuant to clause 34, the purchaser will promptly notify each unsuccessful Bidder and will discharge their bid security, pursuant to clause 15.

34. Signing of contract

34.1. Within 15 days of receipt of the notification of award the successful Bidder shall sign the contract.

35. Performance security

35.1 Within 15 days of the receipt of notification of award from the purchaser, the successful Bidder shall furnish the performance security in accordance with the conditions of contract, in the performance security form provided in the Bidding documents or another form acceptable to the purchaser and signs the agreement.

35.2 Failure of the successful Bidder to comply with the requirement of clause 34 shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security, in which event the purchaser may make the award to the next lowest evaluated bidder or call for new bids.

36 Fraud and corruption

36.1 It is the **purchaser'**s policy that requires that the bidders, suppliers and contractors and their subcontractor observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, the **purchaser;**

(a) defines, for the purposes of this provision, the terms set forth below as follows:

(i) **"corrupt practice"** is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
(ii) **"fraudulent practice"** is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;
(iii) **"collusive practice"** is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;

(iv) **"coercive practice"** is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
(v) **"obstructive practice"** is

(aa) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or
(bb) acts intended to materially impede the exercise of the purchaser's inspection and audit rights provided for under sub-clause 36.2 (d) below.

36.2 The purchaser may, without prejudice to other terms of the bidding:

(a) will reject a proposal for award if it determines that the bidder considered for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for the contract in question;

(b) will cancel the contract if the purchaser determines at any time that the bidder, supplier and contractors and their sub contractors engaged in corrupt, fraudulent, collusive, or coercive practices.

(c) will sanction a firm or individual, including declaring ineligible, either indefinitely or for a stated period of time, to be awarded a contract if it at any time determines that the firm has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for, or in executing, a contract; and

(d) will have the right to inspect the accounts and records of the bidders, supplier, and contractors and their subcontractors and to have them audited by auditors appointed by the Purchaser.

SECTION - III: GENERAL CONDITIONS OF CONTRACT

TABLE OF CLAUSES

Section III: General Conditions Of Contract

1. Definitions

1.1 In this contract, the following terms shall be interpreted as indicated;

(a) "The contract" means the agreement entered into between the purchaser and the supplier, as recorded in the contract form signed by the parties, including all the attachments and appendices thereto and all documents incorporated by references therein.

(b) "The Contract Price" means the price payable to the supplier under the contract for the full and proper performance of its contractual obligations.

(c) "The Goods" means all the equipment and / or other materials which the supplier is required to supply to the purchaser under the contract.

(d) "Services" means services ancillary to the supply of the goods, such as transportation, insurance and any other incidental services, such as installation, commissioning, provision of technical assistance, training and other obligations of the supplier covered under the contract.

(e) "An undependable Supplier/s' under contract means any Supplier who do not accept the purchase order or who delays the supply of required quantities beyond the permitted delays with liquidated damages

(f) "The Purchaser or Corporation" means the APMSIDC, the purchasing agency

(g) "The Supplier" means the individual or firm supplying the goods under this contract.

(h) "The Government" means the Government of Andhra Pradesh or its authorized representatives

(i) "The Project Site", where applicable means the place or places named in Schedule of Requirements

(j) "The End-User" means the authorized user of the equipment/the Medical Superintendent/Head of the Department of the concerned specialty.

(k) "Day" means calendar day

(l) "Delivery period" means the period applicable up to completion of supply, Installation and testing of the equipment and the training of the staff on the equipment, by the supplier at the Project site and accepted by the Purchaser or its representative

2. Application

2.1. These General conditions shall apply to the extent that they are not superseded by provisions in other parts of the contract.

3. Country of Origin: Deleted.

4. Standards

4.1 The Goods supplied under this contract shall conform to the standards mentioned in the Technical specifications and when no applicable standard is mentioned the authoritative

standard appropriate to the goods country of origin shall be followed and such standard shall be the latest issued by the concerned institution.

5. Use of contract documents and Information

5.1 The supplier shall not without the purchaser's prior written consent, disclose the contract or any provision thereof or any specification, plan, drawing, pattern, sample or information furnished by or on behalf of the purchaser in connection therewith to any person other than a person employed by the supplier in performance of the contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for purposes of such performance.

5.2 The supplier shall not, without the purchasers prior written consent make use of any document or information enumerated in para 5.1 except for purposes of performing the contract.

5.3 Any document other than the contract itself enumerated in para 5.1 shall remain the property of the purchaser and shall be returned (in all copies) to the purchaser on completion of the suppliers performance under the contract if so required by the purchaser.

6. Patent Rights

6.1 The supplier shall indemnify the purchaser against all third party claims of infringement of patent, trademark for industrial design rights arising from use of the goods or any part thereof in India.

7. Performance Security

7.1 Within 15 days after the supplier's receipt of notification of award of the contract, the supplier shall furnish performance security to the purchaser for the amount specified in the special conditions of contract.

7.2 The proceeds of the performance security shall be payable to the purchaser as compensation for any loss resulting from the supplier's failure to complete its obligations under the contract

7.3 The performance security shall be denominated in Indian Rupees and shall be in one of the following forms:

(a) A bank guarantee [in favour of Managing Director, APMSIDC, Guntur] issued by any scheduled commercial bank located in India acceptable to the purchaser and in the form provided in the Bidding documents or in any other form acceptable to the purchaser: or.

(b) A Banker's cheque or Demand Draft in favour of Managing Director, APMSIDC, Guntur.

7.4 Fifty percent (50%) of the performance security will be discharged by the Purchaser and returned to the supplier not later than 60 days following the date of completion of the supplier's performance obligations, including any warranty obligations. The balance 50% of the performance security will be retained towards performance security for the maintenance services to be provided for 4 years after the 3 years warranty period and

this 50% will be discharged after completion of performance obligations under maintenance services after 7 years.

7.5 The supplier shall accordingly; either furnishes a fresh bank guarantee for the 50% value or an extension of bank guarantee for 50% of the value covering the 4 years maintenance period after 3 years warranty period. Only after receipt of the above, the 50% of the performance security will be discharged after the warranty period.

8. Inspections and Tests.

8.1 The purchaser or his representatives shall have the right to inspect and / or to test the Goods to confirm their conformity to the contract. The special conditions of contract and / or the Technical specifications shall specify what inspections and tests the purchaser requires and where they are to be conducted. The purchaser shall notify the supplier in writing of the identity of any representatives retained for these purposes.

8.2 The inspections and tests may be conducted in the premises of the supplier or its subcontractor(s) at point of delivery and/or at the goods final destination. Where conducted on the premises of the supplier or its subcontractor(s) all reasonable facilities and assistance including access to drawings and production data shall be furnished to the inspectors at no charge to the purchaser.

8.3 Should any inspected or tested goods fail to conform to the specifications the purchaser may reject them and the supplier shall either replace the rejected goods or make alternatives necessary to meet specifications, requirements free of cost to the purchaser.

8.4 The purchasers right to inspect test and where necessary reject the goods after the goods arrival at site and shall in no way be limited or waived by reason of the goods having previously been inspected, tested and passed by the purchaser or its representative prior to the goods shipment from the country of origin.

8.5 Nothing in clause 8 shall in any way release the supplier from any warranty or other obligations under this contract.

9. Packing

9.1 The supplier shall provide such packing of the goods as is required to prevent their damage or deterioration during transit to their final destination as indicated in the contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit and open storage. Packing case size and weights shall take into consideration where appropriated the remoteness of the Goods final destination and the absence of heavy handling facilities at all points in transit.

9.2 The packing, marking and documentation within and outside the packages shall comply strictly with such special requirements, as shall be provided for in the contract and subject to clause 18 and any subsequent instructions ordered by the purchaser.

10. Delivery and Documents

10.1 Delivery of the Goods shall be made by the supplier in accordance with the terms specified by the purchaser in the Notification of Award.

11. Insurance

The goods supplied under the contract shall be fully insured in Indian Rupees against the loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the manner specified in the special conditions of contract.

12. Transportation

12.1 The supplier is required to deliver the goods to the destinations specified in the contract and the cost thereof shall be included in the contract price.

12.2 The transportation of the Goods after the delivery at the final destination shall be the responsibility of the Purchaser.

13. Incidental services.

13.1 The supplier is required to provide the following services, including additional services, if any, specified in SCC:

(a) Performance of the on-site assembly and start-up of the supplied Goods;

(b) Furnishing of tools required for assembly and maintenance of the supplied Goods;

(c) Furnishing of detailed operations and maintenance manual for each appropriate unit of supplied Goods;

(d) Performance of maintenance and repair of the supplied Goods, for a period of 7 years, provided that this service shall not relieve the Supplier of any warranty obligations under this Contract; and

(e) Training of the users and maintenance personnel, in operation, maintenance and repair of the supplied Goods.

13.2 Prices charged by the Supplier for incidental services, if not included in the contract price of the Goods, shall be agreed upon in advance by the parties and shall not exceed the prevailing rates charged to other parties by the Supplier for similar services.

14. Spare Parts:

14.1 As specified in the special conditions of contract, the supplier may be required to provide the following materials and notifications pertaining to spare parts manufacturer:

(a) Such of spare parts as the purchaser may select to purchase from the supplier providing that this selection shall not relieve the supplier of any warranty obligations under the contract and

(b) In the event of termination of production of the spare parts;

(i) advance notification to the purchaser of the pending terminating in sufficient time to permit the purchaser to procure needed requirements: and

(ii) Following such termination, furnishing at no cost to the purchaser, the blueprints, drawing and specifications of the spare parts, if and when requested.

15. Warranty

15.1 The Supplier warrants that all the Goods are new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and materials, unless provided otherwise in the Contract. The supplier further warrants that the goods supplied under this contract shall have no defect arising from design materials or workmanship (except insofar as the design or material is required by the purchasers specifications) or from any act or omission the supplied goods in conditions obtaining in the country of final destination.

15.2 This warranty shall remain valid for as specified at section V schedule of requirements against each equipment or any portion thereof as the case may be have been delivered at the final destination indicated in the contract, unless specified otherwise in the special conditions of the contract. The warranty period starts from date of commissioning after installation by the firm.

15.3 The purchaser shall promptly notify the supplier in writing of any claims arising under this warranty.

15.4 Upon receipt of such notice, the supplier shall, with all reasonable speed, repair or replace the defective goods or parts thereof without cost to the purchaser other than, where applicable, the cost of inland delivery of the repaired or replaced goods or parts from the port of entry to the final destination.

15.5 If the supplier, having been notified, fails to remedy the defect (s) within a reasonable period, the purchaser may proceed to take such remedial action as may be necessary, at the suppliers risk and expenses and without prejudices to any other right which the purchaser may have against the supplier under the contract.

15.6 Site Visits: The successful tenderer shall visit each User Institution as part of preventive maintenance as per the frequency mentioned under clause 5.1.3 (section-I of IFB) during the warranty period. The tenderer shall attend any number of break down/repair calls as and when informed by the Tender Inviting Authority/User Institution.

15.7 During every visit, a copy of the service report/break down call report, duly signed by the custodian of the equipment/head of the health care institution and stamped shall be forwarded by email/fax/post to the APMSIDC office within 10 days from the due date.

15.8 A warranty certificate (as per format in Annexure III) duly signed and with proper stamp of the institution concerned and also signed by the authorized signatory with the stamp of the successful tenderer shall be submitted to the Tender Inviting Authority for keeping it under safe custody along with the Installation Certificate. A copy of the original warranty papers has to be given to the institution head concerned.

15.9 The tenderer shall submit the activities to be carried out during the preventive maintenance visit as per the format in Annexure IV.

16. Payment

16.1 The method and conditions of payment to be made to supplier under the contract shall be specified in the special conditions

16.2 The Suppliers request (s) for payment shall be made to the purchaser in writing accompanied by an invoice describing as appropriate the goods delivered and the services performed and by shipping document, submitted pursuant to clause 10, and upon fulfillment of other obligations stipulated in the contract.

16.3 Payments shall be made promptly by the purchaser within sixty (60) days of submission of the invoices / claims by the supplier duly furnishing the certificate specified in the bid document from the competent authority.

16.4 Payment shall be made in Indian Rupees.

17. Prices

17.1 Prices charged by the supplier for goods delivered and services performed under the contract shall not with the exception of any price adjustments authorized by the special conditions of contract, vary from the prices quoted by the supplier in its bid.

18. Change Orders

18.1 The Purchaser may at any time by written orders given to the supplier pursuant to clause 31 , make changes within the general scope of the contract in any one or more of the following;

(a) drawings, designs or specifications, where goods to be furnishing under the contract are to be specifically manufactured for the purchaser;
(b) the method of shipping or packing;
(c) the place of delivery; or
(d) the services to be provided by the supplier;

18.2 If any such changes causes an increase or decrease in the cost of or the time required for the suppliers performance of any part of the work under the contract, whether changed or not changed by the order, an equitable adjustment shall be made in the contract price or delivery schedule or both and the contract shall accordingly be amended. Any claims by the supplier for adjustment under this clause must be asserted within thirty (30) days from the date of the suppliers receipt of the purchasers change order.

19. Contract Amendments

19.1 Subject to clause 18, no variation in an modification of the terms of the contract shall be made except by written amendment signed by the parties.

20. Assignment

19.2 The supplier shall not assign in whole or in part, its obligations to perform under the contract, except with the purchasers prior written consent.

21. Sub-contracts

21.1 The supplier shall notify the purchaser in writing of all subcontracts awarded under the contract if not already specified in his bid. Such notification, in his original bid or later, shall not relieve the supplier from any liability or obligation under the contract.

22. Delays in the suppliers performance

22.1 Delivery of the goods and performance of the services shall be made by the supplier in accordance with the time schedule specified by the purchaser in its schedule of requirements.

22.2 Any unexcused delay by the supplier in the performance of its delivery obligations shall render the supplier liable for any or all of the following; i.e. forfeiture of its performance security, imposition of liquidation damages and or termination of the contract for default.

22.3 If at any time during the performance of the contract, the supplier or its subcontractor (s) should encounter performance of the services the supplier shall promptly notify the purchaser in writing of the fact of the delay its likely duration and its causes. As soon as practicable after receipt of the suppliers notice, the purchaser shall evaluate the situation and may at its discretion extend the suppliers time for performance, in which case the extension shall be ratified by the parties by amendment of the contract.

23. Liquidated Damages

23.1 Subject to clause 25, if the supplier fails to deliver any or all of the goods within the time period specified in the contract, the purchaser shall, without prejudice to its other remedies under the contract, deduct from the contract price as liquidated damages, an amount as specified in the SCC for the period of delay, until actual delivery or performance, up to a maximum deduction of **10 percent of the total contract value**. Once the maximum is reached, the purchaser may consider termination of the contract.

24. Termination for Default

24.1 The purchaser may, without prejudice to any other remedy for breach of contract by written notice of default sent to the supplier, terminate the contract in whole or part:

(a) if the supplier fails to deliver any or all of the goods within the time periods specified in the contract or any extension thereof granted by the purchaser pursuant to clause 22; or
(b) if the supplier fails to perform any other obligations under the contract.

24.2 In the event the purchaser terminates the contract in whole or in part, 24.1 the purchaser may procure, upon such terms and in such manner as it deems appropriate, Goods similar to those undelivered, and the supplier shall be liable to the purchaser for any excess costs for such similar Goods. However, the supplier shall continue the performance of the contract to the extent not terminated.

25. Force Majeure

25.1 Notwithstanding the provisions of clauses 22,23,24, the supplier shall not be liable for forfeiture of its performance security liquidated damages or termination or default, if and

to the extent that, its delay in performance or other failure to perform its obligations under the contract is the result of an event of Force Majeure.

25.2 For purposes of this clause "Force Majeure" means an event beyond the control of the supplier and not involving the suppliers fault or negligence and not foreseeable. Such events may include but are not limited to, acts of the purchaser either in its sovereign or contractual capacity, wars or revolutions, floods, epidemics, quarantine restrictions and freight embargoes.

25.3 If a force majeure situation arises, the supplier shall promptly notify the purchaser in writing of such conditions and the cause thereof. Unless otherwise directed by the purchaser in writing the supplier shall continue to perform its obligations under the contract as far as is reasonably practical and shall seek all reasonable alternative means for performance not prevented by the force majeure event.

26. Termination for Insolvency.

26.1 The purchaser may at any time terminate the contract by giving written notice to the supplier, if the supplier becomes bankrupt or otherwise insolvent, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the purchaser.

27. Termination for convenience.

27.1 The purchaser may by written notice sent to the supplier terminate the contract, in whole or in part at any time for its convenience. The notice of termination shall specify that termination is for the purchasers convenience the extent to which performance of work under the contract is terminated and the date upon which such termination becomes effective.

27.2 The goods that are complete and ready for shipment within 30 days after the suppliers receipt for notice of termination shall be purchased by the purchaser and the contract terms and prices. For the remaining goods the purchaser may elect.

(a) to have completed and delivered at the contract terms and prices; and / or

(b) to cancel the remainder and pay to the supplier and agreed amount for partially completed goods and for materials and parts previously procured by the supplier.

28. Resolution of Disputes

28.1 The purchaser and the supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the contract.

28.2 If after thirty (30) days from the commencement of such informal negotiations the purchaser and the supplier have been unable to resolve amicably contract dispute, either party may require that the dispute be referred for resolution to the formal mechanisms specified in the special conditions of contract. These mechanisms may include but are not limited to conciliation, mediation by third party justification in an agreed national or international forum and / or international arbitration. The mechanism shall be specified in the special conditions of contract.

29. Governing Language

29.1 The contract shall be written in English language, as specified by the purchaser in the instructions to bidders. Subject to clause 30, English language version of the contract shall govern

30. **Applicable law**

30.1 The contract shall be interpreted in accordance with the laws of the union of India and the legal jurisdiction is Hyderabad

31. Notices

31.1 Any notices given by one party to the other pursuant to the contract shall be sent in writing and confirmed in writing to the address specified for that purpose in the special conditions of the contract. A notice shall be effective when delivered or on the notices effective date, whichever is later.

32. Taxes and duties

32.1 The rates quoted by the bidder shall be deemed to be inclusive of the sales and other taxes that the bidder will have to pay for the performance of this contract, at the prevailing rates notified by the Government. The purchaser will perform such duties in regard to the deduction of such taxes at source as per applicable law.

SECTION - IV: SPECIAL CONDITIONS OF CONTRACT

TABLE OF CLAUSES

(The corresponding clause number of the General condition is in parenthesis)

Section IV: Special Conditions of the Contract

1. The following special conditions of contract shall supplement the general Conditions of contract. Whenever there is conflict, the provisions herein shall prevail over those of the general conditions of contract the corresponding clause number of the general conditions in parentheses.

2. Definitions (Clause I)

(a) The Purchaser is : The Managing Director, APMSIDC, Mangalagiri, Guntur.
(b) The Supplier is : ----------

3. Country of origin (Clause 3): All goods and related services to be supplied under the contract / agreement shall have their origin in India or any other country with which India has not banned trade relations.

4. Performance security (Clause 7)

4.1 Performance security is 5% of the contract value and shall be valid up to 60 days after the date of completion of performance obligations including warrant obligations, as applicable.

4.2 Add clause 7.5 to the GCC as the following:

In the event of any contract amendment, the supplier shall within 7 days of receipt of such amendment furnish the amendment to the performance security rendering the same valid for the duration of the contract, as amended for further period of 60 days thereafter

5. Inspection and Tests (clause 8)

The following inspection procedures and tests are required by the Purchaser:

5.1 The Supplier shall get each equipment inspected by a competent authority in manufacturer's works and also provide a guarantee/warranty certificate that the instrument conforms to all specifications contained in the contract.

5.2 The *Purchaser* or its representative may inspect and/or test any or all the equipment to confirm their conformity to the Contract specifications, prior to dispatch from the manufacturer's premises. Such inspection and clearance will not prejudice the right of the consignee to inspect and test the equipment on receipt at destination.

5.3 However, on arrival of the equipments at destinations, the purchaser or its representative shall have the right to inspect and/or test any or all the equipments to confirm their conformity to the contract.

5.4 If the equipment or its performance is not as per specified conditions, deficiency or replace the equipment (s) to the satisfaction of the purchaser's representative.

6. Packing (Clause 9)

The Supplier will be required to mark separate packages for each consignee on three sides with proper paint/indelible ink, the following: i. Name of the contract, ii. Contract No., iii. Country of origin of Goods, iv. Supplier's Name and v. Packing of list reference number

7. Delivery and Documents (Clause 10)

(i) Three copies of the Supplier invoice showing Goods description, quantity, unit price, total amount;
(ii) Railway receipt/acknowledgement of receipt of goods from the Consignee
(iii) Manufacture's/Supplier's Warranty and Factory Test certificate;
(iv) Acceptance Certificate issued by the End-User
(v) Inspection Certificate issued by the nominated inspection agency, as applicable

8. Insurance (Clause 11)

i) **For delivery of goods at site, the insurance shall be obtained by the Supplier at his cost for an amount equal to 110% of the value of the goods from "warehouse to warehouse" on "All Risks" basis including war Risks and Strike clauses period in the name of consignee authorized by the purchaser i.e. M.D. APMSIDC. The supplier shall also provide insurance coverage against fire and theft in the name of consignee upto end of the warranty period.**

ii) To submit a copy of insurance document duly attested by the consignee to APMSIDC along with bills for making payment. Otherwise the bills may not be processed.

9. Incidental Services (Clause 13)

No additional services are required to be provided over the services already covered under clause 13 of GCC.

10. Spare parts: (Clause 14)

Add as clause 14.2 to the GCC the following:

Supplier shall carry sufficient inventories to assure ex stock supply of consumables spares such as gaskets, plugs, washers, belts etc., other spare parts and components shall be promptly as possible but, in any case, within (3) days of placement of order.

11. Warranty (Clause 15)

11.1 In partial modification of the provisions, the warranty period shall be as specified at section V schedule of requirements against each equipment, or any portion thereof, as the case may be, have been delivered at site, installed, commissioned, successfully tested and accepted by the Purchaser or its authorized representative

11.2 Substitute Clause 15.4 of the GCC with the following:

Upon receipt of such notice, the Supplier shall within 3 days, repair or replace the defective goods or parts thereof, free of cost at the ultimate destination. The Supplier shall take over the replaced parts/goods at the time of their replacement.

11.3 If the supplier has not done repair/replacement within the time specified above the purchaser will assess the cost of having the repairs/replacements done and the supplier will pay this amount.

11.4 Overall an uptime guarantees of 95% shall be maintained out of total usage period of the equipment by the end users during the warranty period

11.5 All software updates, if any required, should be provided free of cost during Warranty period.

12 Payment (Clause 16)

12.1 Payment for goods and services shall be made in Indian Rupees as follows:

a) 60% of the contract value of the supply part after necessary deduction will be paid to the supplier on submission of copy of invoice with original Delivery Challan as proof of supply to destinations duly certified by the Head of the Institution and RTGS details

b) 30% of payment will be paid on submission of original invoice with stock entries, delivery challan and Installation Certificates (Annexure 1), warranty certificate (Annexure III), copy of insurance document duly attested by the consignee to APMSIDC, calibration, quality assurance certificate test certificate if required as per technical specification after completion of all the performance obligations.

c) The balance 10% will be paid after three months from the date of installation on submission of performance satisfactory report (Annexure-ll), obtained from the Head of the institute or concerned authorities.

d) In case any difficulty is experienced by the successful tenderer in obtaining three-month performance certificate from any of the User Institution after the installation of the equipment, the same shall be brought to the notice of the Tender Inviting Authority immediately in writing. In such event(s), if the Tender Inviting Authority is convinced, the reasons are beyond the control of the successful tenderer, the Tender Inviting Authority, in case of supply orders placed by it, shall release payments at its discretion. In such case the letter sent to the Tender Inviting Authority shall be submitted along with the invoices while claiming payment.

12.2 If there is a delay in installation of the equipment due to reasons not attributable to the supplier such as non readiness of site, 60% of the supply part of the contract value will be released against supply and a confirmation letter from the consignee / end user, on submission of original delivery challan & Invoice copy.

12.3 Cost of Comprehensive Maintenance Contract for each year will be paid, at the end of each year by the Purchaser's representatives/hospital authorities, upon submission of the service reports to the extent of the service delivered as per the contract terms.

13. Prices (Clause 17)

Prices payable to the Supplier as stated in the Contract shall not be subject to adjustment during performance of the Contract.

14 Sub-contracts (Clause 21)

Add at the end of sub-clause 21.1 of the GCC the following. "Sub-contract shall be only for bought-out items and sub-assemblies".

15 Liquidated Damages (Clause 23)

15.1 <u>For delays</u>

Substitute Clause 23.1 of the GCC by the following:

Subject to clause 25 of GCC, the Purchaser shall, without prejudice to its other remedies under the Contract, deduct from the Contract Price, as liquidated damages, a sum equivalent to 0.5 percent of the delivered price of the delayed Goods or unperformed Services for each week of delay or part thereof until actual delivery or performance, up to a maximum deduction of **10% of the total Contract value**. Once the maximum deduction is reached, the Purchaser may consider termination of the Contract.

15.2 For Short fall in Equipment Maintenance services

Any major repair intimated by the *Purchaser or the end-user* shall be rectified by the Supplier from the date of intimation within a period of 3 calendar days and repair the equipment to the satisfaction of the Purchaser or the End User. Failing which the Purchaser has a right to levy a penalty on the Supplier a sum of Rs.10,000/- per day of delay, until the equipment is repaired and brought to the normal working condition to the satisfaction of the Purchaser.

16 **Resolution of Disputes (Clause 28)**

Add as Clauses 28.3 and 28.4 of the GCC the following:

28.3 The dispute resolution mechanism to be applied pursuant to clause 28 of the General Conditions shall be as follows:

(a) In the case of dispute or difference arising between the Purchaser and a Domestic Supplier relating to any matter arising out of or connected with this agreement, such dispute or difference shall be referred to the award of two Arbitrators, one Arbitrator to be nominated by the Purchaser and the other to be nominated by the Supplier or in the case of the said Arbitrators not agreeing, then at the award of an Umpire to be appointed by the Arbitrators in writing before proceeding with the reference, and in case the Arbitrators cannot agree to the Umpire, he may be nominated by the Arbitration committee of the Indian Council of Arbitration, India. The award of the Arbitrators, and in the

event of their not agreeing, of the Umpire appointed by them or by the Arbitration Council of India, India, shall be final and binding on the parties.

(b) The Indian Arbitration Act 1996, the rules thereunder and any statutory modification or re-enactments thereof, shall apply to the arbitration proceedings.

28.4 The venue of arbitration shall be the place from where the Contract is issued.

17 Notices (Clause 31)

For the purpose of all notices, the following shall be the address of the purchaser and supplier.

Purchaser: The Managing Director, APMSIDC, 2nd Floor, Plot No:09, survey number: 49, IT Park, Mangalagiri, Guntur District- 522503

Supplier: (To be filled in at the time of Contract Signature)

18 Comprehensive Maintenance Contract (CMC)

a) The Comprehensive Maintenance Contract includes 4 visits in a year preventive maintenance visits and all the distress calls during the year and also include the probable cost of spares required towards the repairs carried out to bring a not working equipment to its normal working condition, during the year.

b) The supplier shall under take at least one half-yearly preventive maintenance visit and attend to all the break down calls during the year. The payment for the maintenance services will be made at the end of each half-year, upon submission of necessary service reports signed by the end-users.

19 Actions Against the Misconduct of the Supplier

19.1 A Supplier found being supplied similar items with similar tender conditions to any other agency in the country during the validity of the contract with the APMSIDC, at a rate lower than the rate at which they supplied under this tender, the difference amount is liable to be recovered apart from blacklisting the firm for a minimum period of 3 years. The Supplier should furnish undertaking (Annexure-XIII) that they will remit the differential cost, if they quote lower rate than the rate quoted to the APMSIDC to any other agency or department or state, during the period of contract.

19.2 Any substandard supplies without meeting the quality specifications made under the contract shall also entail blacklisting of the firm for a minimum period of three years for that particular product.

19.3 If the bidder fails to demonstrate on asked to do so, of the products quoted with their bid, without any valid or convincing reason to the satisfaction of the Purchaser, the bids for other items offered against the bid notice will not be considered and he may be debarred for a certain period as decided by the Purchaser.

20 Progress of Supply

Supplier shall intimate progress of supply, in writing, to the Purchaser as under:

- Qty offered for inspection and date;
- Qty. accepted/rejected by inspecting agency and date;
- Qty. dispatched/delivered to consignees and date;
- Qty. where incidental services have been satisfactorily completed with date;
- Quantity where rectification/repair/replacement effected/completed, on receipt of any communication from consignee/Purchaser with date;
- Date of completion of entire Contract including incidental services, if any; and
- Date of receipt of entire payments under the Contract.

SECTION V

SCHEDULE OF REQUIREMENTS AND TECHNICAL SPECIFICATIONS

Sl. No	Name of the Item	TPT	GNT	VSK	Total Qty	Warranty	CMC	EMD	Average Annual turnover of the bidder in last three years i.e. 2020-21, 2021-22 and 2022-23
1	Setting up clean room and associated civil/electrical work, supply, installation testing & commissioning of laboratory furniture, hood and associated electrical work	1	1	1	3	**As per specifications mentioned in document**	**As per specifications mentioned in document**	25 lakhs	20 Cr
2	Microbiology & Chemistry equipment	1	1	--	2				
3	High end equipment GCMSMS,LCMSMS, ICPMS	1	1	1	3				
4	Associated manpower	1	1	1	3				

Processing fee: The participating bidders will have to pay tender processing fee (non-refundable) of **Rs. 59,000/-** in the form of online only.

1. **To allow the authorized distributors duly obtaining an agreement/ MOU from the Manufacturer for binding on Post Supply Services i.e. Warranty, CMC, AMC etc., and on agreement executed by the authorized distributor with the Corporation. Further an undertaking from Manufacturer to take responsibility in case of authorized distributor's failure in performing the Contractual Obligations also may be obtained. Proforma will be provided.**

2. EMD shall be furnished in the form of Demand Draft/BG/Online drawn in favour of Managing Director, APMSIDC, Guntur.

Technical Specifications

General Information

1. Bidders are requested to offer the equipment as per the specifications attached.

2. For each item of equipment the bidder should include all the cost associated with fixing, cables, connectors, accessories and ancillary items necessary for the satisfactory operation of that item of equipment. Bidders should make the provisions of starter packs for consumables for demonstration and three months of operation period for the supplied equipment.

3. Spare parts list, listing spare likely to be required for (7) years operations shall be attached with the Bid

4. (i) Bidders are requested to provide, referenced by given equipment code and item name, with their tender offer, the following information for all the items of equipment offered.
   - Name of the Manufacturer
   - Brand Name & Model Number
   - Country of Origin

   (ii) Catalogue, Pamphlet, descriptive literature, spare parts list and technical specifications for each unit of item must be forwarded with the offer.

5. Operating Environment:

   Electrical Supply: The Equipment supplied shall be suitable in all respect for use on the local electricity supply of 200- 270 Volts, 50 Cycles. A suitable stabilizer/CVT to be offered as an optional accessory in case of specific Voltage requirement for the supplied Equipment. Resettable over current breaker shall be fitted for protection wherever applicable.

   Humidity: The unit shall be capable of operating continuously in ambient temperature of 30^0C and relative humidity of around 80%.

7. After Sales Service:

   Bidders are requested to confirm in writing in their bid offer the after sales service they would provide, after the expiry of three-year warranty period, for four more years including an estimated cost an annual servicing contract. The maintenance capability of the bidders currently existing in Hyderabad and Andhra Pradesh should also be clearly stated.

8. All items should be of high quality, durable, and suitable for use in a Hospital. The technical specification and standards of each item delivered shall be that currently in use at the time of delivery.
   a) Electrical safety conforms to standards for electrical safety IEC-60601 / IS-13450.

b) Radiation safety: Safety aspects of Radiation dosage leakage should be spelt out and all the X-ray related products should comply with AERB Guidelines for radiation leakage.

10 The Manufacturer, must have necessary quality certifications for processes such as ISO 9001 Quality Management System for Organization / ISO 13485 Quality Management System for Medical Device.

b) Full Quality Assurance System Approval certificate Management System Certification for Medical Devices and their equivalent International Standards certificates as BIS/CE/USFDA etc.

11. If the bidder fails to demonstrate any of the products quoted, the bid for that product would be considered as withdrawn and suitable action will be taken as per the Clause 15 of ITB. i.e., forfeiture of the Bid security and also the bidder may be debarred for a certain period as decided by the Managing Director.

Note:

1. **The bidder should submit the details of spares which are covered or not covered under warranty.**
2. **The bidder should also submit the detailed price list for all spares.**
3. **The above items has to supply to Food Safety Labs at Guntur, Tirupathi and Visakhapatnam in Andhra Pradesh**

Setting-up of State of the Art

Integrated Food Testing Laboratory on

Turnkey (DSITC) Basis

In the premises of

State Food Laboratory, Guntur,

Tirupati,Visakapatnam

Andhra Pradesh

1. **ESSENTIAL DETAILS OF ITEMS/SERVICES REQUIRED**

The tenders are invited for ***Setting-up of State-of-the-Art Integrated Food Testing Laboratory on Turnkey (DSITC) Basis at State Food Laboratory, Tirupati, Andhra Pradesh as mentioned under schedule of requirements in Part II of E-Tender.*** **This Tender is a Turnkey Project.**

1.1 Scope of Work:

- The scope involves **Drawing, Fabrication, Procurement, Installation, Commissioning, and testing** of the complete facility on a turnkey basis. This includes required clean room for Microbiology section as per FSSAI guidelines, SEFA certified Laboratory furniture as per site requirement, any partition work required to house the equipment separately, all equipment & instruments mentioned below and all associated work like piping, drainage, exhaust, gas distribution & purification, electrical work etc. required to run the facility is in the scope of turnkey contractor.

- The technical details provided in this document serve as only guidelines. Bidder is required to visit the site take necessary inputs required for providing the bid.

- The job will be treated as a total turnkey job. The successful bidder shall be fully responsible for all functions starting from concept to commissioning and validation of the facility with all the system and shall stand guarantee for achieving the desired and rated performance.

- Since the design is an integral part of the scope of works under this tender the bidder is required to propose a suitable drawing as per requirement and arrive at accurate BOQ using the inputs collected.

- The complete design specification calculations and drawings shall be provided by the bidder in the technical part of the bid. Drawing will play a major role in technical evaluation.

- The bidder shall prepare and attach in technical bid the layout plan, RCP, Zoning drawings, Laboratory Furniture drawing etc.

- The bidders are requested to please go through the tender document carefully and submit their bid only if they accept all the terms and conditions of the tender.

- The bidder shall ensure that they submit the offer for all the sub components, failing which their bid shall be rejected.

- The bidder shall ensure that the bid must conform to the delivery, payment terms and warranty terms of the tender.

- The bidder shall have to inspect the site to get themselves acquainted with the site conditions. The Purchaser shall only show the place where they propose to house the facility. All

modifications to the existing structure, additions if any need to be included in the quote. **Site visit certificate must be uploaded in the technical bid failing which bid will get rejected.**

- The bidder must enclose a bar chart showing start and end time of each activity of the bid in the technical bid. Failure to attach the document shall render the bid non-responsive as incomplete.

- The bid must enclose the following documents in the technical bid so that the evaluation can be done without any recourse to additional features.

  - Statement of compliance.
  - All Commercial details like warranty, payment terms etc. but without the price.
  - Certificate that they agree to all the terms & conditions of the tender.
  - Certificate that the item supplied are new, unused and are of latest technology.
  - Certificate that the rates charged are lowest and you have not sold similar system to any organization at a lesser price than the quoted price.
  - Documentary evidence in support of the qualification requirement.
  - Any other document.

1.2 <u>Eligibility Criteria for Pre-Qualification of Bidders</u>. The firm/Bidder fulfilling the following eligibility criteria will be considered for opening of their Commercial Bids: -

(a) Average Annual financial turnover, during the last three years (2020-21, 2021-22 & 2022-23) should not be less than Rupees Twenty Crore Only (Rs. 20.0 Crore). Documentary evidence duly attested by a Chartered Accountant should be submitted along with the Technical Bid. Bidders should also enclose notary attested copy of IT returns filed for the last three financial years, audited copy of audited accounts, balance sheet, annual report etc.

(b) Bidder must have valid GST Registration Certification. A copy of the certificate should be enclosed with the Technical Bid.

(c) Bidder must possess valid PAN Card. A copy of the same should be enclosed with the Technical Bid.

(d) The bidder must be either original equipment manufacturer (OEM) or authorized dealer/distributor.
A copy of the same should be enclosed with the technical bid.

(e) Bidders are required to submit Bank Solvency Certificate for 5 Crore issued not earlier than Oct 2023.

(f) **Site proposed layout for each site must be uploaded in the technical bid. Final lay out will be approved by the user department before starting the work.**

(g) The bidder should have satisfactorily completed/ ongoing similar type of work for Pharma/Biological Research Laboratories/Food Lab/Drug Lab from Jan 2019 to till Bid Submission End Date & time of this BID. The value of each work order should be not less than as mentioned below. PO must be on Bidder Name and not on any other firm.

One completed or ongoing work / PO copy of total value not less than Rs. 1200.00 Lakh Inclusive of all taxes.

"OR"

Two completed ongoing work / PO copy of each PO value not less than Rs. 600.00 Lakh Inclusive of all taxes.

1.3 Schedule of Requirements – List of items/services required is as follow:

i. Setting up of Clean Room, laboratory Furniture and associated Civil/Electrical Work (LT level only) as per FSSAI guidelines.
ii. Drawing, Supply, Installation of Laboratory Furniture & Fume Hoods
iii. Laboratory Equipment's/Consumables
iv. Provision of Manpower

1.4 Payment Terms: The payment will be made as per the following terms on production of the requisite documents:

S.N.	Amount to be paid, INR	Condition(s) for release
Part A.		
1	**80%of civil and electrical works**	**Running Bill after certification by FSSAI/State Civil/ Electrical Empaneled Engineer, against delivery of material as per BOQ required**
2	**20% of civil & electrical work**	**After handing over of the site**
Part B.		
1	**70% of Laboratory furniture & fume hood**	**Against delivery of material and certification by FSSAI/State Civil/ Empaneled Engineer or authorized person**
2	**30% of Laboratory furniture & fume hood**	**After successful installation & commissioning, and certification by FSSAI/State Civil/ Empaneled Engineer or authorized person**
Part C.		
1	**70 % of the cost of equipment**	**On satisfactory delivery of the equipment, duly verified by authorized person from State FDA laboratory**

2	**Balance 30% of the cost of equipment**	**On successful Installation, commissioning and demonstration of the equipment/facility, training, and validation**
Part D.		
	Manpower	**The payment in respect of manpower will be released on quarterly basis, after it becomes due.**

1.4 EVALUATION CRITERIA & PRICE BID ISSUE

Only those Bids will be evaluated which are found to be fulfilling all the eligibility and qualifying requirements of the RFP, both technically and commercially. In respect of Two-Bid system, the technical Bids forwarded by the Bidders will be evaluated by the Tender Inviting Authority with reference to the technical characteristics mentioned in the RFP. The compliance of Technical Bids would be determined on the basis of the parameters specified in the RFP. The commercial terms and documents submitted as part of the technical bids shall be scrutinized by a Technical Evaluation Committee constituted by the Tender Inviting Authority.

The Technical Evaluation Committee may also verify the veracity of claims in respect of the known performance of the equipment offered, the experience and reputation of bidder in the field, the financial solvency etc.

The demonstration/presentation may also be conducted by Technical Evaluation Committee in which external experts from the User Institutions/funding agencies may be Invited.

The price Bids of only those Bidders will be opened whose Technical Bids are cleared after technical evaluation.

The Lowest Bid will be decided upon the lowest price quoted by the particular Bidder for the entire project as per the Price Format given below:

Sr. No.	Items/ Description	Qty	UOM	Price/unit including GST	Amount
Part A:					
1	**Setting up Clean Room and Associated Civil/Electrical Work (120 Sq mtr)**	1	Lot		
Part B:					

2	**Supply, Installation, Testing & commissioning of Laboratory Furniture, Hood and associated electrical work**	**1**	**Lot**		
Part C:					
3	**SITC of laboratory equipment for Microbiology Section**	**1**	**Lot**		
4	**SITC of laboratory equipment for Chemistry Section**	**1**	**Lot**		
Part D:					
5	**Manpower as per Part D of RFP for 01st year**	**1**	**Lot**		
6	**Manpower as per Part D of RFP for 02nd year**	**1**	**Lot**		
	Total Project Cost				

Note: individual breakup price for all turnkey items must be submitted. Breakup per Sq meter rate also quoted. Individual equipment price also to be submitted. Individual rates for manpower also to be submitted.

2. Details:

Sl. No	Name of the Item	TPT	GNT	VSK
1	Setting up clean room and associated civil/electrical work, supply, installation testing & commissioning of laboratory furniture, hood and associated electrical work	**Yes**	**Yes**	**Yes**

Part A

The Clean room must be set up as per specification attached. The Associated Civil and Electrical work must be carried out as per the laboratory requirement and as per attached specification. All contractors/Bidders must visit the site and get acquainted with the available infrastructure and local site conditions and get the site visit endorsed by the authorized person of the institute. as a token of acceptance of the above-mentioned term.

The same certificate should be uploaded along with the technical bid. Without the site visit certificate bid will get rejected. A proposed lay out has been attached for the bidder`s reference. Bidder`s must prepare the drawing as per availability of site. Bidder must submit Zoning lay out, Pressure zoning lay out, Man & material movement.

Part B

The Laboratory Infrastructure, SEFA certified Laboratory Furniture & ASHRAE certified Fume Hood for analytical lab completes with all accessories, Electrical points, Gas Distribution system with purification panel & utilities must be set up as per site requirement & specification attached. The Associated minor Civil and Electrical work must be carried out as per applicable regulations & standards as far as possible.

Part C

List of Instruments/Equipment

I. Microbiology Laboratory Requirement

Sr. No.	Instruments/Consumables	Qty	GNT	TPT	VSK
1	Laminar Air Flow	2	yes	yes	Nil
2	Bio Safety Cabinet Class II Type B2	1			
3	Autoclave Vertical	3			
4	Incubators: Ambient to 70 °C	1			
5	Incubators: 5 °C to 50°C	1			
6	Digital Colony Counter	2			
7	Lab Blender	2			
8	Water Bath – Serological	1			
9	Analytical Balance	3			
10	Upright Frost Free Vertical Deep Freezer (-20°C)	2			
11	UV-Vis Spectrophotometer with 21CFR software	1			
12	Binocular Microscope	1			
13	Howard Mold Counter	1			
14	Refrigerated Centrifuge	1			
15	BOD Incubator	2			
16	Micro Filtration Assembly	1			
17	Digital pH Meter	2			
18	Fumigator	1			
19	UV Viewing Chamber	1			
20	Anaerobic Jar	1			
21	Hot Air Oven	2			
22	Micropipette (2 T0 5000 µl)	2 set (set of 6)			
23	Carbon dioxide incubator	1			

24	Frost Free Double door (side by side) Refrigerator	2			

II. Instruments/Equipment for Chemistry Section:

Sr. No	Equipment	Qty	GNT	TPT	VSK
1	LIQUID CHROMATOGRAPH TANDEM MASS SPECTROMETER (LC-MS/MS)	1	yes	yes	yes
2	INDUCTIVELY COUPLED PLASMA MASS SPECTROMETER (ICP-MS)	1	yes	yes	yes
3	GAS CHROMATOGRAPH TANDEM MASS SPECTROMETER (GC-MS/MS)	1	yes	yes	yes
4	HPLC System	1	yes	yes	Nil
5	Analytical balance (0.0001 accuracy)	2			
6	Hot air oven	2			
7	Muffle Furnace	2			
8	Fume Hood	1			
9	pH meter	2			
10	Turbidity meter	1			
11	Conductivity and TDS meter	1			
12	Magnetic stirrer	1			
13	Vortex mixer	1			
14	Hot plate	2			
15	Water bath	1			
16	Flash Point apparatus	1			
17	Laboratory Refrigerator	1			
18	Deep Freezer (-20C)	1			
19	Deep Freezer (-40C)	1			
20	Vacuum Oven	1			
21	Karl Fischer titration	1			
22	Polarimeter	1			
23	Flame Photometer	1			
24	Lovibond Tintometer	1			
25	Auto titrators	1			
26	Water purification system including water softener	1			
27	Bomb Calorimeter	1			
28	Rotary evaporator	1			
29	Orbital Shakers (Refrigerated)	1			
30	Water bath shaker	2			

31	**Auxiliary equipment like Homogenizer, Bottle top dispensers, Sulphur dioxide apparatus, etc. 1. Homogenizer -1 Nos. 2. Bottle Top dispenser - 3 Nos. 3. Laboratory Grinding Mill-1 4. Thermo-Hygrometer-3 qty 5. Plastic Container for lab grade water - 5lit cap.- 3 qty 6. Sulphur dioxide glass apparatus-1 Nos. 7. Gas Flow Meter-1 qty**	**1**			
32	**Automated Fat analyzer**	**1**			
33	**Automated Fiber analyzer**	**1**			
34	**Automated Protein analyzer**	**1**			
35	**Refrigerated Centrifuge (Bench top)**	**1**			
36	**Microwave digestion system**	**1**			
37	**Automatic Glassware washing and drying system**	**1**			
38	**Filtration Unit**	**1**			
39	**UV-VISIBLE SPECTROPHOTOMETER**	**1**			
40	**Automated Solid Phase Extraction System**	**1**			
41	**ATOMIC ABSORPTION SPECTROPHOTMETER**	**1**			

Note 1: If the needs arise the successful bidder may also be allowed to deliver other approved or equivalent makes and models/ latest specification of the equipment quoted by other qualified bidders in the tender after approval from authorized person from IPM/APMSIDC, Andhra Pradesh.

Note 2: The bidders must quote for all the items mentioned above and any required accessories/ requisite requirement which is necessary to run the equipment and has not been mentioned above. In Case bidder fails to quote for all the items mentioned above his bid will not be considered for evaluation.

Part D-

Manpower to be provided:

Successful bidder will have to provide full time 9 Skilled technical manpower with minimum qualification & experience mentioned below who will be responsible for the working of the instrument i.e., sample preparation, method validation, operation of instrument and data interpretation. The personnel will not claim to be an employee of FSSAI/State/UT/MC Laboratory. The person will work under the supervision and direction of Food Analyst /Director of Laboratory /State laboratory head and carry out the required analysis of various samples/participation in PT/ILC as received in the lab. He /She will also be responsible for providing training on the methods /instrument to the other laboratory staff. In view of that, we have decided to hire qualified and competent hands to occupy the following positions:

S. No	Area	No of technical manpower to be provided	NO of Years manpower to be provided by the bidder	GNY	TPT	VSK

1	**High-end equipment GCMSMS, LCMSMS, ICPMS**	**3**	**5**	**yes**	**yes**	**yes**
2	**Chemistry Section**	**4**	**2**	**yes**	**yes**	**yes**
3	**Microbiology laboratory**	**2**	**3**	**yes**	**yes**	**yes**

I. Manpower – 1

: Qualification and experience:

• Minimum 02 years' operating experience in **GCMSMS** equipment.

MSc Chemistry/Food Tech/Agri - Experience in sample prep for Vitamins & Minerals and pesticides residue analysis.

II. Manpower – 1

: Qualification and experience:

• Minimum 02 years' operating experience in **LCMSMS** equipment.

MSc Chemistry/Food Tech/Agri - Experience in sample prep for Vitamins & Minerals and pesticides residue analysis.

III. Manpower – 1

: Qualification and experience:

• Minimum 02 years' operating experience in **ICPMS** equipment.

MSc Chemistry/Food Tech/Agri - Experience in sample prep for Vitamins & Minerals and pesticides residue analysis.

Bidders will have to maintain backup of the manpower supplied in case of prolonged leave or any unforeseen circumstances.

In case the person provided by the bidder is found to be involved in any unlawful activity, the bidder will be liable to remove him immediately and provide a replacement. The decision of the State FDA would be final and binding to the bidder in this regard.

Note: Engagement of manpower and period of engagement will be at the sole discretion of State FDA laboratory In-Charge.

Detailed Technical Specifications:

Part A: <u>Specifications for Clean Room (Model layout area approx. 120 sq. meters)</u>

Price to be quoted in per sq. meter.

S.No	Specifications	Qty.

1.	**GENERAL:** **Design, Manufacture, procurement, installation, testing and commissioning of classified Food Microbiology Laboratory. The work shall be carried out to the specifications stated under however not limited to the same. Cost of additional works, if any, as against the below stated shall be deemed to be incorporated in the bid. The Laboratory shall be delivered fit for the purposes for which it is intended to as per the requirement and satisfaction of the Client and further shall satisfy all norms of Microbiology Food Lab prescribed by competent authority. Furnishing of design, drawings and obtaining necessary approval of the same from the competent authorities shall be part of the scope of the work. Pre-_ site Visit & Inspection is mandatory. Laboratory must follow the minimum area availability to accommodate requisite equipment for performing required functions / in respective areas as per the Model layout.** 1. **Sample receiving area, a documentation room and office area.** 2. **Media preparation room with sterilization and washing area (having sufficient space to store dry Media/reagents and Prepared Media in Refrigerators)** 3. **Sample preparation room (ISO Class 7as per ISO 14644-1 and Class 10,000 as per FS209E equivalent) over pressure 45 pa.** 4. **Inoculation & Reference culture room ((ISO Class 7as per ISO 14644-1 and Class 10,000 as per FS209E equivalent) over pressure 30 pa.** 5. **Clean corridor minimum 4.5-6 feet wide. (As Per Space Availability at site)** 6. **Incubation room and enumeration room (ISOClass 8 as per ISO 14644-1) having space to accommodate 2-4 individual. The incubation room should be accessible from separate entry other than clean room such that, the analyst need not enter clean room to observe the results. The incubation room should be connected to Inoculation room and clean corridor through pass box in order to receive material to be incubated and for re inoculation whenever required. (Three-way pass box from corridor can serve this purpose).** 7. **Small analysis room attached to Incubation room (ISO Class 8)** 8. **De-contamination room (Unclassified) having access to collect material after Incubation room and also from Inoculation /Reference Rooms.**	

	9. **Entry to clean Room through minimum 2 air lock rooms; AL1 (change room) and AL2. Exit from clean room through air lock AL2 and AL1 having different air pressure.** 10. **Section for molecular analysis is also provided with three interconnected rooms as follows-** a. **DNA extraction room (ISO class 7) over pressure 45 pa*.** b. **PCR Room (ISO class 7) over pressure 30 pa*.** c. **POST PCR Room (ISO class 7) over pressure 45 pa*.** **(*PRESSURE IN PCR ROOMS CAN BE SET AS PER FUNCTIONS DECIDED BY LAB)** **11. Clean room must be provided with Emergency door/fire/smoke alarms and emergency bell.** **The necessary civil and electrical work shall be done as per the specifications. The class validation of 'clean area' shall be done and report should be submitted by the renderer through a third-party accredited agency. Equipment used for validation should have valid traceable calibration certificates. The furniture shall be supplied as per the specifications given below.**	
2.	**MODULAR PANELLING and FLOORING WORKS** **The entire lab as per the layout shall be made with clean room modular partitions as per the following specification.** 1. **Wall panels: pre-fabricated insulated sandwich panels made up of 0.8 mm GPSP (Galvanized Plain Skin Pass) GI sheet on both side with epoxy polyester powder coating and insulation of PUF with density 40±2 Kg/m^3. Overall thickness of the panel shall be 80 mm.** 2. **Cladding panels: pre-fabricated insulated sandwich panels made up of 0.8mm GPSP GI sheet on both side with epoxy polyester powder coating and insulation of PUF with density 40±2 Kg/m3. Overall thickness of the panel shall be 40mm.** 3. **Ceiling panels: pre-fabricated insulated sandwich panels made up of 0.8mm GPSP GI sheet on both side with epoxy polyester powder coating and insulation of PUF with density 40±2 Kg/m^3. Overall thickness of the panel shall be 60mm. Panels shall be designed to fit within each other with self-supported system. Load bearing capacity of the panel shall be 150kg/cu.m. Necessary clean room lightings and provision for air conditioning outlets shall be provided. Suitable factory-made cutouts wherever required should be provided in the wall panel as applicable for fan filter units, HEPA filters, light fixture, return air grills, power sockets, cables. Pipes, exhaust ducts, magnahelic gauge, smoke sensors, utilities etc. The space between the panels and ceiling must have access for cleaning and repair purpose.**	--

4. **Riser Panels: Pre-fabricated insulated sandwich panels made up of 0.8mm GPSP GI sheet on both side with epoxy polyester powder coating and overall thickness of the panel shall be 80mm with inbuilt riser duct along with perforated grill.**

Note: **The gaps between panels shall be suitably filled with metal filler/epoxy/ silicone for a perfectly flush finish. Panels should be easy to maintain, durable, antistatic/conductive and fire retardant. The panel should be easy to clean and extremely hygienic.**

5. **View Panel/Window: The MOC is toughened & tempered double glass of minimum 5mm thickness. Minimum standard size must be 1000mm(W) x 1000mm(H).** ***(Size may vary according to situation & availability of space according to finalized layout).*** **View panel should be placed 1000 mm – 1200 mm or above the finished floor level on the wall panel. All the joints between toughened glass and wall panel should be properly sealed by metal filler/Epoxy/silicone for perfectly flush finish. Panel should be easy to maintain, durable, antistatic, and fire retardant. Wherever possible windows must be kept to have a view of outside environment of the laboratory. Window must be sealed with double walled thickened glass (Minimum two windows from clean room to outside environment).**
6. **Aluminum coving: Installation of Extruded Aluminum anodized Powder Coated covings for Wall to Wall, Wall to ceiling panels shall be properly coved with R-50, R-75, 90^{o}, 2D & 3D corners clip on type (male female connectors) so that there is no any dust deposition in the joints. Corners, internal & external cove joining pieces shall be properly sealed with silicone sealant.**
7. **Clean Room Doors: Air tight, swing configuration flush type door finishes shall be 45±1 mm thick with chemical resistance antifungal anti-bacterial properties having 1.2 mm thick frame and 0.8mm powder coated GI sheet in door sandwich with self-extinguishing poly urethane form of density40±2 kg/m^{3}suitable to fix on 60 mm thick panel with provision for double glazing glass having minimum 5 mm thick tempered glass. Also includes hardware like SS handle back-to-back, TS-71 door closer, SS hinges, SS ball bearing nut hinges, concealed tower bolt for double door, both side lock and key arrangement, SS kick plate and suitable neoprene, Y seal type gasket may be used between the door jam and door step.**
8. **Emergency Air tight, swing configuration flush type door finishes shall be 45±1 mm thick with chemical resistance antifungal anti-bacterial properties having 1.2 mm thick frame and 0.8mm powder coated GI sheet in door sandwich with self-extinguishing poly urethane form of density40±2 kg/m^{3}suitable to fix on 60 mm thick panel with provision for double glazing glass having minimum 5 mm thick tempered glass. Also includes hardware like SS handle back**

to back, TS-71 door closer, SS hinges, SS ball bearing nut hinges, concealed tower bolt for double door, both side lock and key arrangement, SS kick plate and suitable neoprene, Y seal type gasket may be used between the door jam and door step.

Exit door/Window with panic latch door Laboratory shall be provided wherever mentioned for personnel exit in case of an emergency. (As per Space Availability at site)

9. **Door Accessories: It includes hardware like**

   SS handle back-to-back,
   TS-71 door closer,
   SS hinges,
   SS ball bearing but hinges, concealed tower bolt for double door, both side lock and key arrangement, SS kick plate and suitable neoprene, Y seal type gasket View panel

10. **Flooring: Seamless antistatic (EPOXY)floor – Laying 3mm (2+1) mm thick self-leveling epoxy floor. The existing floor should be properly cleaned up and roughened to prepare the surface for application of epoxy primer, filling of small cracks and unevenness with epoxy repairing putty. Over a uniform cemented flooring 2 mm of hardener (screed compound) is applied after that 1 mm of semi liquid epoxy resin will be applied for smoothening. Epoxy used for this application will be self-leveling and clean room compatible made of (FOSROC OR SIKA) or equivalent. The installed floor should display good abrasion resistant & monolithic jointless surface. Shall be of stain proof, Scratch resistant, Uniform color and free of joints / undulations / bubbles etc. The floor level shall match with the surrounding area.**

Any cracks, pin holes, porosity etc. shall not be acceptable and to be repaired by contractor to the full satisfaction of users before handing over.

11. **Wall to Floor coving – The cove shall be made with silica sand and (EPOXY)with a radius of 60mm or larger, with all wall / floor joints made as merging without any unevenness. The existing walls need to be cleaned before and any water seepage or termite /rodent infestation needs to be treated permanently in classified and unclassified area under scope of microbiology laboratory**
12. **Wall panels should not have any sharp edges and corners and do not support bacteriological or fungicidal growth and is resistant to most chemicals used in the lab.**
13. **Plumbing lines as required shall be provided. Water drain work with SS GMP TRAP &it's Connect with main drain line including all**

	related civil work. Connection to the drain pipe in wash area must not be open and cause of contamination. Water connections to sink must be provided. 14. **Exhaust line for autoclave, biosafety cabinet, laminar flow and other equipment shall be provided.** 15. **The switch board should not have any sharp edges.** 16. **All doors except the doors in change rooms shall have view panels.** 17. **Air locking system to maintain different pressure at entry and exist area of clean room as shown in figure.** 18. **The room and sterile corridor over pressure (high positive pressure) should be as indicated.** 19. **Fresh air and exhaust should be provided for wash/sterilization and decontamination area.** 20. **The bidder should do validation initially while commissioning and 1 more validation in an interval of 12 months.**	
3.	1. **Heating, Ventilation and Air conditioning system (HVAC)** 2. **The following area shall be provided with ISO 7 (Class 10,000) with humidity control HVAC and maintained at 22 ± 3 °C and Relative Humidity 55±5%** i. **Clean corridor over pressure 40 ±5 pa** ii. **Sample preparation room over pressure 45±5 pa** iii. **Inoculation room & Reference culture room over pressure 30±5 pa** iv. **Incubator room over 30±5pa (ISO Class 8)** v. **DNA extraction and POST PCR in molecular section over pressure 45±5 pa** vi. **PCR Room over pressure in molecular section 30±5 pa** vii. **Entry and exist at 15 to 30 pa respectively.** **The following area shall be provided with unclassified AC ventilation** i. **Media preparation room/sterilization room/office room** ii. **Sample receipt/storage** **Overall air quality shall be Class 10000 and should be class 100 at grill level of HEPA filter. (To achieve this air quality, if any additional items are required which are not mentioned in the technical specifications, shall be included in the offer.)** **Validation of HEPA filters by appropriate tests like PAO etc.** . **Air Velocity and Air pattern at outlet of terminal filtration unit / filters. iii. Air Particulate count. iv. Air Change rate calculation.** v. **Temperature & Humidity test.** vi. **Pressure differential levels of the clean room / adjoining areas.** vii. **Positive pressure in Pascal as indicated for area**	--

a. Air Handling Unit (Thermo-Acoustic Lined):

The air handling units shall be double skin (with high density puff insulation), sectional, special high static draw through/blow through type AHU's complete with thermal break profile consisting of mixing air plenum section, blower section with DIDW blower (Supply blower), DX type coil, humidifier section, coil section, fan and motor section, in suitable horizontal configuration. 'Zero leakage/Very low leakage' aluminum supply air dampers, return air damper, Unit base frame with vibration isolation pad, suitable inspection doors for filter, coil and blower section AHU, motor suitable with Variable frequency drive (VFD), drive set with coupling guard, vibration isolators, internal lights etc.

Capacity –<u>For lab area 1300±100sqft (approx. 120sq.mtrs.)</u>

AHU (3-4 No. s approx. subject to site requirement): -

Capacity – 16000 - 18000 CFM

(*Define after .dwg finalization).*

Material and Construction

Housing / Casing

Thermo-acoustic panels shall be 46±2mm thick made of 0.6mm Precoated GSS on outside, 0.6mm Plain GI intermediate sheet & 0.6mm Plain GI perforated Inner sheet. There should not be any metal-to-metal contact between inner and outer skins of AHU casing to ensure thermal bridging. AHUs with mixing box or wherever fresh air are ducted shall be with thermal break profile.

Entire AHU to be mounted over Heavy Guage Galvanized steel sheet.

Thermo-acoustic panels shall be 46±2 mm thick:

a) **23±2 mm thick Thermal insulation- CFC free injected PUF of density not less than 40±2 kg/cu. m. sandwiched between Outer sheet of the panel made out of 0.80 mm pre-coated galvanized sheet with PVC guard on outside & 0.6mm Plain GI on inside.**

b) **Acoustic insulation- 23±2mm thick Glass wool with Laminated tissue of density 70-80 kg/cu.m. between 0.6mm Plain GI outer sheet & 0.60mm Plain Perforated G.I. inner sheet. These panels shall be screwed from outside to the framework with gasket system to make the joints airtight.**

Units shall be required with access door(s) for maintenance purpose.

The cooling coil Drain pan shall be made out of minimum 22G stainless steel sheet externally insulated with 13mm thick closed cell Nitrile rubber insulation (For coastal area insulation thickness 19 mm) with multiple

	slope to facilitate fast removal of condensate. The OEM should be AHRI/Eurovent certified i. **Duct air purification system (photo-hydro-ionization technique)** ii. **Chemical filters provision with full charge of granular media filter, painted cold-rolled steel construction, non-toxic and non-hazardous. Media consisting of following: - activated alumina and sodium permanganate & activated carbon permanganate.** **b. Cooling coil** i. **Dx type coil (eg. 8.5 TR coil capacity and < 500 FPM velocity across coil.)** ii. **Coil shall be pitched in the unit casing for proper drainage** iii. **The tube should be of suitable dia inner grooved Copper, Tube thickness- 0.5 mm** iv. **Fin details: Plain Hydrophilic, 0.15 mm thick, Aluminum** v. **10-12 FPI** vi. **Header and End Plate – GI** vii. **coil face area shall be designed as per coil capacity and design calculations shall be submitted** viii. **Coil row- 6/8 row deep ix. Coil, header all joints shall be suitable to withstand an inside pressure of 20 Kg/cm2** c. **Fan** i. **Type- DIDW forward curve/backward curve (centrifugal)** ii. **Number of fans – 2 Nos per AHU. Each fan shall be of 100 percent capacity.** iii. **Connection - Flexible FRLS PVC sheet of minimum 1.5mm thick** iv. **Model - Suitable for desired air delivery (minimum) at desired static pressure** v. **Air outlet velocity- Not more than 10.0 M/sec.** vi. **Fan efficiency shall be more than 70 %. Fan curve shall be submitted for approval.** vii. **The fan shall be suitable for operational variable speed with varying airflow and static pressure requirement.** viii. **Heavy duty anti-vibration mount shall be provided for insulating the unit casing.** ix. **Flame retardant, water proof silicone rubber, impregnated flexible connection shall be provided at the fan discharge.** x. **The fan housing shall be of Galvanized sheet steel and the impellers shall be fabricated from heavy gauge Galvanized steel sheet as per approved manufacturers' standard. Fan impeller shall be mounted on solid shaft supported to housing with angle iron frame and pillow block heavy-duty ball bearings.** d. **Motor** i. **Capacity- Rated kW of motor shall have at least 20% more than the**	

		calculated kW based on load, fan efficiency. A calculation sheet may be included in the technical offer.	
	ii.	No of motors per AHU-2 Nos, Each AHU fan has separate motor.	
	iii.	Totally enclosed fan cooled squirrel cage induction motor with IP-55 protection, class F insulation & selected for quiet running.	
	iv.	Rated voltage- 415V, 3 phase, 50Hz.	
	v.	Allowable variations- ±10%, ±3% frequency, 5% total harmonic distortion during running and starting.	
	vi.	Type of starter- Suitable for DOL starting.	
	vii.	Voltage drops during start- The motor shall be able to accelerate with additional 15% voltage drop due to starting current.	
	e.	Pulley	
	i.	Taper lock pulley for fan and motor with V-Belts shall be used in drive set. Protection mesh shall be also supplied for this area wherever required.	
	f.	Frame	
	i.	Extruded aluminum section with thermal break section shall be provided below fan and motor. Spring mounted rubber pads shall be provided below this section to avoid any vibration.	
	g.	Drain tray	
	i.	20G - SS 304 with nitrile rubber/PUF insulation	

	h. Vibration isolation **i. Suitable anti-vibration mounting shall be provided.** **i. Filter** i. **AHU shall have two stages of filtration** ii. **Pre-filter- Efficiency 90% down to 10 microns, Filter casing- Aluminum, Box type iii. Fine filter- Efficiency 95% down to 5 microns. Filter casing Aluminum, Frame Al/GI. Fine filter shall be washable 5 ply HDPE . type – Flange type iv. Fresh Air to AHU shall be ducted along with pre-Filter and Damper. Size of fresh air duct is approx. 400 x 400mm. Cost of damper and filter shall be included in cost of AHU.** **v. Dampers shall be opposed blade type. Blades shall be made of aero foil design hollow extruded aluminum sections with integral gasket and assembled within a rigid extruded aluminum alloy frame. All linkages and supporting spindles shall be made of aluminum or nylon, turning in Teflon bushes. Manual dampers shall be provided with a Bakelite knob for locking the damper blades in position. Linkages**	

shall be extended wherever specified for motorized operation. Damper frames shall be sectionalized to minimize blade warping. Air leakage through dampers when in the closed position shall not exceed 1.5% of the maximum design air volume flow rate at the maximum design air total pressure.

i. **Application of 12 mm thick XPE TOC Slim insulation Cross Linked polyethylene foam with aluminum metalized foil for insulation on Supply duct running inside building area and with UV Foils for insulation for supply Ducts running out side building area i.e., exposed to atmosphere**
j. **Application of 09 mm thickness. XPE TOC Slim insulation Cross Linked polyethylene foam with aluminum metalized foil for insulation on Return duct running inside building area and with UV Foils for insulation for Return Ducts running out side building area i.e., exposed to atmosphere**
k. **Installation, Testing & Commissioning of powder coated perforated (65%) supply and Return air grills made out of extruded Aluminum sheets**
l. **Installation, Testing & Commissioning of Powder of suitable numbers and dimensions of coated HEPA Filters (Efficiency, efficiency 99.99% for 0.3 microns with individual test certificates.) housing with PAO & Pascal Pressure Test Point with canvas connection and VCD.**
m. **Maximum sound limit in the corridor area shall be 50 to 60 db.**
n. **Installation, Testing & Commissioning of Riser Filters.**
o. **Installation of Magnehelic differential Pressure Gauge- Magnehelic gauge shall be provided for measuring differential pressure of clean room with adjoining area. Outer body of the magnehelic gauge shall be stainless steel (0-20 / 0-30 / 0-50 MM WG IN AHU AND ± 30 / 50 PASCAL FOR ROOM)**
p. **Temperature and RH sensor to measure the temperature and humidity of each clean room. Accuracy levels: Temperature: ± 0.2 °C or better, RH: ± 1% or better.**
q. **The electrical wiring inside the AHU room and interconnection between AHU and outdoor unit through required protective circuits in all manners including HP, LP with fully automatic control unit shall be provided.**
r. **All the external ducting shall be made weather proof.**
s. **Fresh Air Louvers (Wherever specified)**

Louvers should be of aluminum construction duly anodized (more than 20 micron). Blades shall be of extruded aluminum sections fixed on a rigid aluminum frame. Supporting frames shall be provided for bigger louvers to ensure minimum warping.

13. Filters

Pre – filters (MERV-8/ G-4):

Cleanable filter made out of dry cleanable synthetic type minimum 50mm thick, shall be provided on the suction side of AHU as a standard equipment with the unit. These filters shall have the efficiency of 90% down to 10micron particle size. When these filters become loaded or full of dirt, it is removed from service and replaced by another filter. Face velocity across these filters shall not exceed 155 MPM.

14. Ultraviolet Germicidal Irradiation (UVGI) System

GENERAL

UVGI System shall be provided with the primary aim of achieving substantial reduction in bacteria and Virus, both airborne and on cooling coil surface (when used in AHU). The UVGI System shall preferably be 100% indigenous or American/Canadian make. Chinese origin manufactured or make of UVGI systems shall not be accepted.

Selection Criteria/Basis of Design: (Coil and Duct Mounted)

1. **The UVGI system and fixtures should be installed in sufficient quantity and in such an arrangement so as to provide an equal distribution of UVC energy on the coil and in the drain pan and other surfaces prone to biofouling. To maintain energy efficiency, the UVC energy produced shall be of the lowest possible reflected and shadowed losses**
2. **The use of UV design and sizing software is recommended for proper system sizing and configuration. This UVGI system configuration software shall calculate the number of lamps, calculated UV intensities and placement of lamps for proper configuration. UVGI systems are intended to operate continuously, 24 hours a day. The UVGI system shall be designed to cover the entire face area of the cooling coil when installed in the AHU.**
3. **The UVGI system shall achieve near total elimination of bacteria/virus/ biomass on the cooling coil. Subsequently, the UVGI system may be kept in ON position 24/7 (even when the AHU is switched off or is not in operation) to ensure that the bacteria/virus does not reappear.**
4. **Intensity: The minimal UVC energy shall not be less than 4 micro-W/cm2 per inch of lamp at 1 Meter and not more than 30% loss is allowed over a 2-year period.**
5. **When Installed in the AHU, the UVGI system and fixtures shall be installed downstream of the cooling coil. The selection and placement of the UVGI system shall ensure full irradiation of the entire face area of the cooling coil and the UVC energy bathes all surfaces of the coil and drain pan.**
6. **The face velocity of dehumidified air over the coil will be 500 FPM or lower.**
7. **The UVGI System shall be free standing and be mounted in such a**

manner that lamps are in perpendicular position to air flow using Aluminum arrangement to be corrosion free.

8. In case system is to be installed in the Duct, same shall be installed at an appropriate location to provide sufficient residence time.
9. The UVGI system should comply and tested by internationally recognized testing lab like ETL, CSA or UL to following standards.

- Luminaires: IEC 60598 Luminaires, CSA C22.2 No. 250.0 Safety for Luminaires, UL 1598 Safety for Luminaires,
- UL: 867/CSA C22 NO. 187 standard (Ozone level must be within the US EPA acceptable limit of 0.05 ppm)
- UL: 758 (for electric cables)
- UL: 224 (for Sockets and tubing)
- UV System with UL 1995 ABQK listed

10. The lamps and power supplies shall be rated for wet locations and air handler use.
11. The Duct mounted system same shall be installed at an appropriate location to provide enough residence time. The suitable length of straight duct should be provided by the HVAC Contractor/Customer at site. Please refer BOQ/Dwg. for the same.
12. The face velocity of dehumidified air over the coil will be 500 FPM or lower. When installed in the duct the face velocity can be higher and as per the duct design.

PRODUCT

1. The UV lamp shall be T5 Single ended four pin lamps
2. The UVGI system shall be suitable to operate with 230V+/-10V, single-Phase A.C. Supply
3. Units shall have UVC germicidal lamp of high output, 800m A each when measured at a horizontal distance of 8-10 inches from the lamp, HVAC type, assembled and tested. Components shall include a housing, high efficiency electronic power source, sockets and lamps, all constructed to withstand HVAC environments
4. Housings shall be made of robust materials, with Units having suitable electrical connectors to simplify wiring.
5. High efficiency electronic power sources shall be 115 or 208/230V AC. Installation of ballast and control electronics to be outside the AHU, in a separate control panel.
6. UV lamp shall be fabricated out of special high transmission glass, T5 (15mm) diameter. They shall produce 95% of their energy at 254 nm. UV lamp shall not produce ozone or other secondary contamination and to substantiate this, the lamps shall be tested by approved Indian Lab or internationally recognized lab for output performance of 254 nm. Lamp manufacturer to submit the certificate from this lab. The lamp shall be

	high output type and should not be lower than 800 mA. Special interior coating shall be provided to ensure high UV output overrated life	

	7. **The internal wiring (UV resistant) for UV system shall be supplied by manufacturer/strategic business partner/ authorized dealers of manufacturer business partners only.** 8. **The system shall have a separate Control Panel consisting of:** a. **Electronic Ballast with high power factor of > 0.90** b. **Run hour meter** c. **Mains on indicator lamp** d. **MCB or Disconnect Switch** 9. **Each lamp shall have a useful service life of 18,000 hours with no more than a 30% output loss at the end of the two (2) years of continuous use. Lamps shall be shielded hard quartz hot filament type with a "getter" cathode filament guard (essential for the extended lamp life operation of two (2) years.** 10. **Lamps used should be of UV -C ceramic lamp with pre -heat start having electronic ballast rated 15000 starts. Lamps should be hot cathode germicidal lamp** 11. **Ballast: The power source i.e., ballast will be an electronic high frequency type, program start with a power factor greater than 0.90 and an energy conversion of at least 75%. It shall be a universal 120-277 VAC, 50-60 Hz, IP 64 Rated unit and be operationally reliable in indoor environments ranging from 45-degree F to 170degree F. THD Value as per IEEE 519. The ballast shall carry** **Lifetime warranty against manufacturing defects**	

4.	**OUTDOOR CONDENSING UNITS (Packed ductable split AC)** **7.** **7. Capacity – 40-45 TR** **@ approx..1300±100 sqft (approx. 120sq.mtrs.)** 7. **(Capacity will define after area finalization)** 8. **Refrigerant –R410A/R134a/R407/ecofriendly** 9. **Compressor Type - Hermetically Sealed Scroll/screw** 10. **No of Compressors = 1** 11. **Controller - Microprocessor based** 12. **Power Supply – 440 /380 V, 3 Phase, 50 Hz, AC** 13. **Tube material – inner grooved copper** 14. **Fin Material – hydrophobic coated aluminum** 15. **Condenser fan – Direct driven Axial fan** 16. **Fan material – Aluminum** **It shall be complete with compressor, condenser, suitable motor, microprocessor-based control panel, capacity control device, safety & control instruments, cold insulation, interconnecting refrigerant/copper tubing (to be paid separately) refrigerant & oil, Liquid line strainers, de-hydrants, solenoid valves, shut off valves,**	**--**

	safety & isolation valves, Suitable distributors, vibration isolators to minimize vibration, flexible connection at suction & discharge side of compressor etc. Air cooled condensing unit shall be suitable connected with the cooling coil (Dx) of the AHU along with thermostat, expansion valves fittings and accessories. Suitable power cable and control wiring from ODU to AHU shall be in the scope of the bidder. **AHU /CONDENSING UNITS should be** a. **well mounted over cemented blocks and raised 2 feet above the ground/floor** b. **kept under fiber or metal shade for rain /dust protection.** c. **kept at a place easily accessible for maintenance and must not obstruct any passage or the activity of lab/neighboring area.**	
5.	**Drain Pipe** **G.I drain pipe shall be 40 mm NB dia pipe having thickness of 2 mm (minimum). Pipe shall be insulated with 19 mm nitrile rubber and 28-gauge Aluminum cladding. Proper slope shall be maintained to drain out the AHU condensate. Pipe shall be erected with suitable fittings, accessories and supports.**	

6.	**Electrical works comprehensive** **1. The power required for the microbiology lab shall be taken from the main panel of the building. Necessary distribution panels shall be installed by the bidder.** a. **Adequate lightings shall be provided.** b. **The electrical inspectorate's approval shall be obtained by the bidder** **Wiring and Accessories** 2. **Supply & wiring for following points in surface / recessed mounted rigid medium gauge 20mm PVC conduit with all accessories, using 3 runs of 1.5 Sq mm FRLS PVC insulated stranded copper conductor single core wire for phase, neutral & earth, with modular 6A one way switch, modular plate, suitable GI box etc. as required:** 3. **Light point / exhaust fan / turbo ventilator points as required** 4. **Supply & wiring for circuit / sub main wiring in surface / recessed mounted rigid medium gauge 25mm PVC conduit with all accessories in surface/recess** 5. **Supply and fixing the following modular type switches & accessories with modular plates and suitable GI boxes and giving necessary connections as required** **i. 6A SP 5 pin shuttered modular type socket with switch in each switch board**	**--**

	ii. **2 nos 6 A SP 5 pin shuttered modular type socket with 2 No's modular switch –UPS power.** iii. **16A 5 pin shuttered modular type socket with switch** iv. **Provision for shifting existing switch board to a conventional location and giving connections etc.** v. **Supply and fixing 20 amps. 240 volts SP industrial type socket outlet (IPP) with 2 poles and earth, metal enclosed plug top including supply and fixing of one number 20 amps (10kA) SP MCB (C-Curve) in sheet steel enclosure on surface or in recess with chained metal cover for the socket outlet and complete with connections testing and commissioning etc. as required.** vi. **Installation of Clean Room Lights & Fixture with fitting with LED12" x 12** **vii. Installation & Testing of** c. **Modular Switches.** d. **Modular Sockets for various instruments in each room** **MCBs AND MCB DISTRIBUTION BOARDS** i. **Supply and installation of sheet steel, phosphatized and painted, dust and vermin proof enclosure of MCB 4 Way double cover Vertical DB – 3 Phase of including copper /brass bus bar, neutral link, earth bus and DIN rail with MCB/isolator/RCCB etc. fixed on wall using suitable anchor bolts or fixed in recess including cutting hole on the wall, making good the damages, color washing etc. as required.** ii. **Supply and installation of sheet steel, phosphatized and painted, dust and vermin proof enclosure of UPS DB –6 way single-Phase double cover (IP 42/43)230 V of including copper /brass bus bar, neutral link, earth bus and DIN rail with MCB/isolator etc. fixed on wall using suitable anchor bolts or fixed in recess including cutting hole on the wall, making good the damages, color washing etc. as required** **Single line electrical distribution diagram should be submitted by the vendor along with the technical offer.**	
7.	**Wall mounted fans (In unclassified areas)** **Supply, conveyance, installation, testing and commissioning of wall mounted fans, as required. Fixing necessary bolt and nuts, making good the damages etc. as required including giving connections with required length of 24/0.20mm PVC insulated and PVC sheathed 3 core round copper conductor flex wire or with extended original wiring etc. and numbers as required.**	--
8.	**Lighting fixtures** **Supply and fixing cast aluminum down light fitting with 11 to 14 W CFLCFL (or equivalent LED) to false ceiling including giving connections with required length of 16/0.20mm PVC insulated and**	--

	PVC sheathed 3 core round copper conductor flex wire conforming to relevant ISS or extending the original wiring and making good the surface as required (Wipro WCP 27118 SWG or equivalent make)	
9.	**Validation of HVAC after completion** **1) Documentation for DQ, IQ, OQ, PQ with certificates of all brought items.** **2) Integrity test for HEPA Filter's once.** **3) Room Pressure balancing once.** **4) Air velocity test** **5) Particle count** **6) Recovery Test** **7) Air Flow Pattern**	**--**
10.	**Fire extinguisher** **Supply and installation of ABC type dry powder fire extinguisher of 2 kg. Capacity** **complete with initial charges and installation brackets**	**--**
11.	**Air curtain 1.7m length should be installed wherever required** **i. Type: Non-Recirculating, Horizontal mount** **ii. Suction: Front without duct iii. Discharge: Vertically down**	**--**
12.	**Hand Sanitizer (Manual Foot Operated dispenser for clean rooms)** **The hand sanitizer should dispense disinfectant (Isopropyl alcohol) onto hands.** **Body should be non-corrosive stainless-steel construction.** **Tank capacity 500ml**	**Minimum 4 nos.**
13.	**Static Pass box. (As per Space Availability at site)** **Installation, Testing & Commissioning SS-304 static Pass Box fully automatic system, with electromagnetic interlocking system, digital display, UV & fluorescent light alarm system etc.** **(Working size: 450mm W X 450mm D X 450mm H)**	**1-2 nos.**
14.	**Dynamic Pass box .(As per Space Availability at site)** **Installation, Testing & Commissioning SS-304 DYNAMIC Pass Box fully automatic system, with electromagnetic interlocking system, digital display, HEPA Filters, UV & fluorescent light alarm system etc.** **(Working size: 450mm W X 450mm D X 450mm H)**	**4-5 nos.**
15.	**Cross over Bench at entry and exist of clean room and media room (As per approved layout)** **1. SS 304, 18 & 16G combination, mat finish** **2. Inside horizontal support** **3. Bottom both side 30mm color for will be grouting** **4. Approx. size 1000 mm W x 400 mm D x 600mm H (can be modified to size)**	**2-3 nos.**

16.	**SS-304 Modular work bench with SS -304 top. (As per Space Availability at site)** **Table should be SS 304 without drawer and locker all exposed surfaces should be 18 gauge** **SS.** **Size - 1500 MM x 750 MM (W) x 900 MM (H) (minor deviations acceptable)**	**3-4 No.s**
17.	**SS-304 Modular Work bench With Granite top.(As per Space Availability at site)** **Installation & Commissioning SS304 with 1 drawer and 1 shutter door storage.** **Size - 1500 MM x 750 MM (W) x 900 MM (H) (minor deviations acceptable** **Table top should be provided with (18mm ±1mm) thick well-polished Black Granite.**	**4-5 No.s**
18.	**SS-304 Modular work Bench with Granite Top and Sink .(As per Space Availability at site)** **Stainless steel SS304 table of dimension 1800 x750 (W) x 900 mm (H) tabletop height from floor. Minor deviation in measurement is acceptable. Should have under bench drawers and shutters with locking arrangement.** **Table top should be provided with (18mm ±1mm) thick well polished Black Granite.** **Should be supplied with one sink (SS 304) at the right end of size 400 x 300 mm Approx (16x12 inches) sink joints should be continuously welded with two way water tap .** **Water connections and plumbing should be provided**	**1-2 No.s**
19.	**Movable trolley with lockable wheels** **SS 304, 18 & 16G combination, mat finish** **Size :- 2.5' x 2.5' with two shelf 2nos**	**2 No.s**
20.	**Revolving stool** **Installation & Commissioning of SS-304 WORKING STOOL for above bench** **SS 304, 18 & 16G combination, mat finish.**	**13-15 nos.**
21.	**UV Garment SS-304 Storage (in Air Lock 2 of entry to clean room) Garment storage cubicle complete SS304 construction SS rod for hanging folded garments.** **SS perforated shelves / tray (removable) at bottom for keeping mask and shoe cover etc.** **Fully toughened glass door/Acrylic UV light with fittings & limit switch Leveling legs.** **Approx internal dimension: 610(W)x 430(D)x 1335(H)mm with minor modifications as per available area**	**1 no.**
22.	**SS Dustbin: - Stainless steel foot operated dustbin of appropriate size as per requirement will be provided**	**7-8 No's**

23.	**Sample/Chemical SS-304 Storage Cabinet:** **SS perforated 4 -5 No.s adjustable shelves/tray** **Fully toughened glass door/Acrylic** **Approx internal dimension: 610(W)x 430(D)x 1335(H)mm with minor modifications as per available area**	**3-4 No's**
24.	**Wall cabinets (overhead racks):- SS wall cabinets of suitable size will be provided for storage .**	**4-5 No's**
25.	**Air Conditioner 1.5 Ton, 3 Star for office room**	**(1 No.)**
26.	**UPS online of suitable capacity for entire facility: centralized 60KVA +60 KVA 3 phase with inbuilt Isolator and one hour back up. There should be dedicated line for UPS**	**01 Nos**
27.	**Stabilizer 50KVA**	**01 Nos**

PART B-

FUME HOOD & ACCESSORIES	
Specifications	
SUMMARY AND SCOPE Furnishing and delivering all service outlets, accessory fittings, electrical receptacles and switches, as listed in these specifications, equipment schedules or as shown on drawings. Fittings attached to the fume hood superstructure shall be mounted on the front fiscal of the hood as per the drawings. Furnishing and delivering all service outlets, accessory fittings, electrical receptacles and switches, as listed in these specifications, equipment schedules or as shown on drawings. Plumbing fixtures mounted on the fume hood superstructures shall be pre−plumbed with **SS-304 TUBLNG**. Electrical fixtures shall be prewired. The fume hood superstructure shall be listed to UL Standards for Safety by Underwriters Laboratories Lync. (UL). Final plumbing and electrical connections are the responsibility of Lab Furniture & Fume hood Suppler. ***SPECIFICATIONS:*** ***Frame construction:- (compulsory)*** Entire structure should be "C" frame type. 60 X 30 X 2 mm pipe is used for main frame structure. 30 X 30 X 1.5 mm pipe should be used for bottom support. CO_2 welded & finished with highly chemical resistant epoxy powder coating. **Design Structure:** Aerodynamic, Floor mounted **Airflow Type:** AUTOSASH Type **Construction (Exterior):** Pure Epoxy Powder coated 40−60 mlcron on 18 Gauge Galvanized steelwith rigid structure **Construction (Interior):** Phenol based high−pressure compressed compact laminate (6 −7mm thick) **Apparatus holding grid**: A corrosion resistant grid to hold the apparatus covering entire length ofthe hood bullet in at fume hood backside. **Baffle arrangement:** 3−polnt suction system (for light, normal & heavy fumes) with baffle to ensuresmooth and immediate exhaust of fumes.	

Airfoil: Flush powder coated airfoil mounted on the frame of the hood.

Worktop: Chemical resistant splash & spillage proof 'Jet Black Granite' worktop. The work surface and cup drain shall be available in black.

Sink, Water tap with drain arrangement: Worktop should have oval shaped 'PP' Cup−sink for drainage with water valve will have trap for waste collection, plate with peg stand, eye wash etc.

Sash (Shutter): Vertical rising counter−balanced 'Toughened Float Glass' (5 mm thick) flitted in the Powder coated Aluminum extrusion from Hettich Germany or equivalent. Smooth and light sash operation. Clear sash open height = 770−775 mm.

Fume Hood Plumbing Services: Utility services like **Raw Water, Chilled Water Supply & Return, Compressed Air, Nitrogen, Vacuum** shall consist of remote control valves as selected located within the end panels, controlled by extension rods projecting through the control panels of the hood, with color coded plastic handles. All plumbing fittings shall be factory installed and pulped between the valve and the outlet. Inlet pulping shall have a single−point connection for each valve provided and carried to a point 1" above the fume hood roof or 1" above the worktop rear corner depending on the rough−in locations shown in the drawings, **ALL the Plumbing services connecting to the Valves & to the Header line, will be SS-304 ONLY.**

ALL drainage to be linked to the effluent drainage system.

Fume Hood Electrical Services: The hood superstructure shall be wired and contain a UL label certifying acceptable were gauge, connections, and fixtures and were color coding. Wring electrical services shall consist of two duplex receptacles and a light switch. **4+4 nos of 5/15Amps Socket & switch, 230 Volt AC,** and 3−wlre polarized grounded with ground fault interruption

Lighting: *Vapour proof LED fittings 2X20W LED/Tube/ 2X18W LED tube* with metal enclosure for better illumination with less power consumption.

Electrical Utilities: Four nos. electrical sockets & switches, 'North West' make or equivalent (230 V, 5/16 A, 50 Hz), Switches have LED to indicate 'ON' position. A soft touch button panel with man switch, switch for blower & tube light & spare switch should be provided. LED indicators to show the ON & OFF positions of switches should be provided.

The control panel in the hood is provided with starter for blower for air suction in cluster of two fume hoods

CHEMICAL STORAGE BASE CABINET:

Standard Steel

- Unless otherwise indicated base units under hoods shall be fabricated of cold rolled prime grade roller leveled furniture steel. Gauges of steel used in construction shall be 18 gauge except as follows:
- Corner gussets for leveling bolts and apron corner braces, 12 gauge.
- Hinge reinforcements, 14 gauge.
- Top and intermediate front horizontal Ralls, apron Ralls and reinforcement gussets, 16 gauge.
- Door assembles and adjustable shelves, 20 gauge.
- Performance of the planted surfaces shall match that of the fume hood outer panels.
- Complete rigid steel structure to support Fume hood
- Epoxy powder coated attractive color combination
- There should be two storage units with two shutters each. Each unit should have one shelf.
- All the fume hoods installed in a lab has to be connected to a Compact wet

scrubbing system which shall be kept on the roof of the building the scrubbing system should operate whenever the fume hoods are in operation. Necessary electrical connection, water connection from each lab has to be provided by the bidder.

- Since the building of the lab is pretty old no additional opening on the wall shall be allowed. The bidders shall inspect the existing ducting which shall be used for exhaust of the fume hoods installed in the lab. Necessary repair lf any to the ducting is a part of this tender.

Level adjusting screws: To adjust fume hood level by ± 20 mm.

Damper: To regulate airflow a damper is provided at the outlet of hood.

Testing: All fume hoods are **"factory tested"** for design as per **ASHRAE 110 or EN 14175.** Also, **"on site validation**" for face velocity will be carried out to ensure working of fume hood as perinternational norms.

Location of Tests and Test Facility: All tests referenced herein shall be performed in the bidder'sfume hood test facility & also the Field ASHRAE or EN 14175 testing is must.

Hood shall be tasted with a face velocity of 100 FPM open vertically till safe opening height and at100 FPM right, left and center 100% open horizontal.

Standards: Fume hoods must have third party certification of **ASHRAE 110 Or EN 14175 QUALLTY ASSURANCE**

The laboratory fume hood manufacturer shall provide fume hood work tops and casework all **manufactured & shipped with** proper packing & should take the full responsibility of the entire scope of works as specified in the tender.

General Performance: Provide certlflcatlon that fume hoods meet the performance requirementsdescribed in section.

PERFORMANCE TEST RESULTS

Performance Test Results (Chemical Spot Tests):

Testing Procedure:

Chemical spot tests for non−volatile chemicals shall be made by applying 5 drops of each reagent tothe surface to be tested and covering with a 1−1/4" dia. watch glass, convex side down to confine the reagent. Spot tests of volatile chemicals shall be tested by placing a cotton ball saturated with reagent on the surface to be tested and covering with an inverted 2ounce wide mouth bottle to retard evaporation. At the end of the test period, the reagents shall be flushed from the surface with water, and the surface scrubbed with a soft bristle brush under running water, rinsed and dried.

Test Evaluation:

Evaluation shall be based on the following rating system.

- Level 0 − No detectable change.
- Level 1 − Slight change in color or gloss.
- Level 2 − Slight surface etching or severe stalling.
- Level 3 − Platting, cratering, swelling, or erosion of coating. Obvious and significant deterioration.

After testing, panel shall show no more than four (4) Level 3 conditions.

Test Reagents

Test No.	Chemical Reagent	Test Method
1	Acetate, Amyl	Cotton ball & bottle
2	Acetate, Ethyl	Cotton ball & bottle
3	Acetic Acid, 98%	Watch glass

Acetone	Cotton ball & bottle	
Acid Dichromate, 5%	Watch glass	
Alcohol, Butyl	Cotton ball & bottle	
Alcohol, Ethyl	Cotton ball & bottle	
Alcohol, Methyl	Cotton ball & bottle	
Ammonium Hydroxide, 28%	Watch glass	
Benzene	Cotton ball & bottle	
Carbon Tetrachloride	Cotton ball & bottle	
Chloroform	Cotton ball & bottle	
Chromic Acid, 60%	Watch glass	
Cresol	Cotton ball & bottle	
Dichlor Acetic Acid	Cotton ball & bottle	
Dimethylformanide	Cotton ball & bottle	
Dioxane	Cotton ball & bottle	
Ethyl Ether	Cotton ball & bottle	
Formaldehyde, 37%	Cotton ball & bottle	
Formic Acid, 90%	Watch glass	
Furfural	Cotton ball & bottle	
Gasoline	Cotton ball & bottle	
Hydrochloric Acid, 37%	Watch glass	
Hydrofluoric Acid, 48%	Watch glass	
Hydrogen Peroxide, 3%	Watch glass	
Ladle, Tincture of	Watch glass	
Methyl Ethyl Ketone	Cotton ball & bottle	
Methylene Chloride	Cotton ball & bottle	
Mono Chlorobenzene	Cotton ball & bottle	
Naphthalene	Cotton ball & bottle	
Nitric Acid, 20%	Watch glass	
Nitric Acid, 30%	Watch glass	
Nitric Acid, 70%	Watch glass	
Phenol, 90%	Cotton ball & bottle	
Phosphoric Acid, 85%	Watch glass	
Silver Nitrate, Saturated	Watch glass	
Sodium Hydroxide, 10%	Watch glass	
Sodium Hydroxide, 20%	Watch glass	
Sodium Hydroxide, 40%	Watch glass	
Sodium Hydroxide, Flake	Watch glass	
Sodium Sulfide, Saturated	Watch glass	
Sulfuric Acid, 77%	Watch glass	
Sulfuric Acid, 96%	Watch glass	
Sulfuric Acid, 77% and Nitric Acid, 70%, equal parts	Watch glass	
Toluene	Cotton ball & bottle	
Trichloroethylene	Cotton ball & bottle	
Xylene	Cotton ball & bottle	
Zinc Chloride, Saturated	Watch glass	
Sulfuric Acid, 33%	Watch glass	
*Where concentrations are indicated, percentages are by weight.		
The fume hood, work benches and cabinets must be manufactured by a single		

manufacturer for better visibility, finish and workmanship to have a perfect look of the lab.	

LABORATORY FURNLTURE & ACCESSORLES: - CRCA (Cold Rolled Close Annealed or G. I. Sheets)

SPECIFICATIONS

SUMMARY AND SCOPE

Furnish all cabinets and casework, including granite tops, ledges, supporting structures. Include delivery to the building, set in place, level, and scribe to walls and floors as required.

Supply & Installation of all utility service outlet accessory fittings, electrical receptacles, plumbing and electrical switches & fittings as mounted on the laboratory furniture. The furniture required lbs along the walls and in some labs island table.

Supply & Installation of, all laboratory sinks, cup sinks or drains, drain troughs, overflows and sink outlets with integral tailpieces, which occur above the floor, and where these items are part of the equipment. All tailpieces shall be furnished less the couplings required to connect them to the drain pulping system.

Supply & Installation of service strip supports where specified, and settling in place service tunnels, service turrets, supporting structures and reagent racks of the type shown on the drawings

. **GENERAL REQULREMENTS:**

SEFA Standard:

The entire Laboratory furniture should be tested as per SEFA−8M standards in SEFA Approved labs with latest 2016 Guidelines published by SEFA. Falling which ltr lead to disqualification of bid.

Note: - CRCA (Cold Rolled Close Annealed or Skin passed/zero spangle G. L. Sheets or both materials can be used.

Frame construction:- (compulsory)

Entire structure should be "C" frame fabricated out of heavy gauge hollow pipes size 60 x 30 x 2 mm and 2.0 mm thick steel plates. The structure will be provided with necessary leveling boltssuitable for ± 5 mm level adjustment. Open ends of the pipe will be provided with elegant finish plastic caps. The structure shall be duly treated for the rust prevention and coated with epoxy powder coated.

Powder Coating:-

Complete module & frame work are processed with 8 tank pre- treatment and finished with highly corrosion resistant 'Akzonbel/ PolyBond' epoxy powder coated for better corrosion resistance. The thickness of powder coat shall not be less than 50-60 mlcron, conforming to relevant BLS code, which accordingly passes the test of Salt Spray for 1000 hours.

. **TECHNLCAL REQULREMENTS:**

General Requirements: Lt lbs the intent of this specification to provide a high quality steel cabinet specifically designed for the laboratory environment.

Sheet Steel: Cold rolled sheet or G. L steel shall be prime grade 16, 18 and 20 gauge; roller leveled, and shall be treated at the mill to be free of scale, ragged edges, deep scratches or otherinjurious effects.

Glass: Glass used for framed sliding and swinging doors shall be 1/8" float glass. Glass used for unframed sliding doors, shall be 1/4" float glass.

Steel Gauges:

Gauges of steel used in construction of cases shall be 18 gauge, except as follows:
Corner gussets for leveling bolts and apron corner braces, 12 gauge.
Hinge reinforcements, case and drawer suspension channels, 14 gauge.
Top and intermediate front horizontal Ralls, table aprons and reinforcement gussets, 16 gauge.
Drawer assembles, door assembles and adjustable shelves, 20 gauge.

1. 0 <u>Storage Cabinets Castors type</u> : Standards Heavy Duty under Module along with two front lockable castor wheels & two rear non lockable castor wheels (For Easy cleaning Purpose & Aesthetic looks) , comprising of one drawer one shutter, one drawer and two shutter, all drawers and adjustable height shelf. Cabinet shutter should be in double skin construction and should be provided with heavy duty, knuckle and barrel type SS hinges and positive catch arrangement.

1.1 Cabinet Frame: 1.2 mm horizontal and vertical stiffeners and 1.0 mm vertical panel of CRCA (Cold Rolled Close Annealed) 0r G.L sheet.

1.2 Cover Panels: End sled panel and back panel should be of 1.2 mm thick CRCA MS sheet. All panels should be removable to repair any service line behind the units in future.

1.3 Shutters: Metal Shutters of CRCA or G.L sheet and 40−50 mlcron pure epoxy powder coating having a Scratch Hardness of 3Kgs.

1.4 Shelves & Drawers: CRCA or GL shelves with a load carrying capacity of 40−50 Kg. The overall load carrying capacity of cabinet to be 80 Kg of UDL − Uniformly Distributed Load (40−50 kgs. on each shelf and 40−50 kgs. on bottom). The overall load carrying capacity of drawer should be 40 kgs. Of UDL for a pair of ball slide.

1.5 Slide's & Handles: High precision double extension ball slides. Hinges to be spring loaded with CED (Cathode Electrode Deposition) coating with self-closing mechanism. Handles should be PVC Recessed.

Locks: Each unit should have a locking facility with 180˚, 10 lever cam lock mechanism.

1.7 Legs: The units to be supported on wide base Polystyrene legs (Hettich Make or equivalent) high impact proof material of base diameter 40−50 mm. Load bearing capacity of each leg should be at least 425− 450kg/ leg. The legs should be height −adjustable with a range of +/− 50 mm.

2. Reagent Shelves: should have be of complete modular design consisting of horizontal 2 stage storage shelves. The end vertical support should be 1.2 mm & horizontal shelves of 1.0 mm thick CRCA M.S. / G.L Sheet. Each shelf should have a load carrying capacity of 30−40 kgs. Of UDL for the length of 1000 mm. The complete M.S. material of cabinet to be pretreated (degreased, Zinc phosphate) and epoxy powder coated for better corrosion resistance. The thickness of powder coat to be 45−50 micron, which passes the test of Salt Spray for 1000 hours and having the Scratch Hardness of 3Kgs.

3. Polypropylene Drop in Sinks of size 558X455X300mm (approx.) made of high density 5mm polypropylene elasticity 5 mlcron/ thickness, should have PH resistance with organic dissolvent.

3 **way faucets:** sink unit shall have 3 way (2 stralght+1 swan neck) 360˚ turn type water faucets made up of Brass with epoxy powder coating. Lt should be PH and rust resistant. The switch valve cast to be made of ceramic that can avoid acid wear. The outlet produced in PVC, has detachable hose nozzles, allay pressure, changeable high−pressure outlet constructed or normal clean outlet control of water flow faucet immediately.

5. **SS Pegboard** of overall size of 550x420mm (approx.). Adjustable PP pegs of 10mm dia. Lt should have a welded square tube of 20x40x1mm (approx.). Tube should be of PVC material.

6. **Electrical Accessories and fittings** should consist of electrical trunking of 1.0 mm thick CRCA MS sheet. Lt should have a high temperature withstanding capacity with excellent electrical insulation properties. The rear portion of above accessories which lbs in contact with love metalshall be made from thermo set material which should not melt on heating. Each electrical module consists of (North−West make or equivalent):

2 No. 16 Amp 5 Plan socket

2 No. 16 Amp Switch with LED

7. **Work surface** should be 18−19mm (± 1 mm) thick high quality granite in jet black color with pre moulded, pre polished edges. The backing material for granite should be 6 mm thick Neoprene mat.

. **Service Indexes:**

gs shall be identified with service indexes in the following color coding:

Cold Water out−	Dark Green
Helium−	Dark Blue
Raw water−	Orange
Cold Water in−	Light Green
Nitrogen−	Brown
Vacuum−	Green
Hydrogen−	Pink
Nitrogen−	Light Blue

Applicable Standards:

SEFA 3 : Scientific Equipments & Furniture Association SEFA 8M : Scientific Equipments & Furniture Association

Quality assurance and workmanship :

Only approved brands of items shall be accepted. Samples shall be got approvedbefore taking up full supply/installation.

Lf required Tests on representative samples and/or components thereof shall be gotconducted from reputed Laboratory as decided by the Ln−charge.

Samples shall be taken/made as per the direction of the Ln−Charge in presence of the authorized representative of the contractors. Samples shall be signed and sealed by both the parties. Manufacture's Test certificate for the product being offered lbs to be provided to the department.

The specifications are intended for the general description of the work quality and workmanship. The specifications are however not intended to cover the minute details and work shall be execute according to the specifications given herein or in its absencethe relevant BLS/SEFA specification/standards or the best practice recommended by relevant Indian Manufacturers or best trade practices.

All material shall confirm to the approved makes of materials specified. The procurement of various materials shall be either from the manufacturers or their authorized dealers so that there is no duplicate/surplus makes are used. Notwithstanding all above, contractor shall be held responsible for the execution of works and use of

proper best available quality of materials as per the tender specification. For the items/materials not appearing in the list, the decision of Engineer−in−charge shall be final and binding.

The contractor shall arrange stage wise inspection of the furniture at factory of the works by Ln−Charge or his authorized representative lf asked for. Contractor will have no calm lf the furniture brought at site lbs rejected by Ln−Charge in part or full lot due to bad workmanship /quality. Such furniture will not be paid for and the contractor shall remove the same from the site of work within 7 days after the written instructions in this regard are issued by Ln−Charge or his authorized representative.

The contractor shall produce all materials in advance so that there lbs sufficient time for testing and approving of the material and clearance of the same for use in work. The contractor shall produce test certificates of all the material in respect of their conformation to the relevant Indian standards/quotation speclflcatlon. All tests required for the materials as desired by the Ln−Charge shall be at the contractors cost.

Testing may also be carried out at the discretion of the Ln−Charge, from the lot of finished product brought at site by the contractor. Ln case such tests have been carried out by the principal manufacturer at its testing facility, the same will may be provided by the contractor for consideration.

approved makes of materials:-

Plant	:	LCL/Aslant Plants/Berger/Looks/Nerolac/Berger
Float Glass	:	Mold Guard/Glaver Bel/Slant Gobain
Expansion Bolts	:	Hilt/Fischer/Hettich
Glazing Sealant	:	Dow Corning/GE Sealant
SS/Chrome Coated Hardware	:	Dorma/Hafele/Hettich
Aluminum Alloy Extruded Section:		Hindalco/Indalco/ Jindal
Hinges	:	Hettich/Haffle/Grass
Locks	:	Dorset/Locksmith/Godrej/ Hettich/Haffle

EXHAUST SYSTEM (PP/FRP DUCTLNG AND ACCESSORLES)

TENDERED SPECIFICATIONS

1. Exhaust duct (PP/FRP) Specification

All ventilation duct components should be fabricated of polypropylene type L, Grade−L (dark gray) and /or polypropylene .The PP Grade L material can be rolled without heating, resulting in a lower coat for the finished product.

Round Duct− All ducts should be fabricated using polypropylene with glass lining sheets with fusion jolts completed with flanges, bends, translation places, branch entries, and MS supports with epoxy Planting, GL hardware's etc. The polypropylene ducting should be lined with FRP lining of 3mm thickness and total thickness of PP−FRP should be 6−7mm. All supports used should be of MS with Epoxy planting.

Elbows should have radius an approximate centerline of 1−1/2" times duct diameter, 90˚ elbows can be either 3−plece or 5−plece meter, 45˚ elbows, 2 or 3 place meter. Lf no preference lbs given, 3−place 90˚ elbows and 2−plece 45˚ elbows will be provided.

Translations should be tapered cone −type only. The cone will be the same material thickness asthe duct material. Translations should be concentric.

Branches should enter the man ducting at a 45˚ angle, unless otherwise specified. Couplings forsizes up to 24" can be either sleeve type (no stop) or standard with a stop. Only sleeve couplings are available in sizes above 24". Socket depth for both to be3"−4".

Flanges for Size 6" through 20" will be heat formed from PP duct or cut from flat sheet stock. Leg size will either 1−1/2" x3/16" for diameters up to 30".

Bolt holes will be 3/8 "diameter on approximate 4"−5" centers. Suggested bolting can be eithergalvanized GL both should be ¼"−20 x 1−1/2" long with a nut and two washers provided for each bolt.

Suggested gaskets should be 1/8" thick, closed cell neoprene for duct size up to 24".

Quadrant dampers or blast gates should be provided with a locking device for permanently settling after balancing.

End caps can be either permanently welded in place or fabricated to allow removal.

Access panels and / or view ports can be provided with clear PVC material or Plexiglas and willbe held in place with SS self −tapping screws.

Installation (joining) can be accomplished with the belt and spigot (cementing) method, flanging or thermal welding

Duct Construction

The fabricated duct dimensions should be as per approved drawings and all connecting sections are dimensionally matched to avoid any gaps.

Duct Sizes Ln mm	Thickness of PP	Thickness of FRP
0-750mm	3 mm	3 mm
750-1500mm	5 mm	5 mm
1500-2000mm	5 mm	8 mm

Support System

A completely supporting system consisting of fully threaded rods, double L bottom brackets nuts, Washers, clamps for circular ducts and anchor bolts as supplied.

Flexible Connections

Provide flexible duct connections wherever ductwork connects to vibration isolated equipment and on all exhaust final connections to spot extractor and as indicated on the drawings. Construct flexible connections of neoprene−coated flameproof fabric crimped lento duct flanges for attachment to duct and equipment. Make air−tight joint. Provide adequate joint flexibility to allow for thermal, axial,

transverse and tensional movement and also capable of absorbing vibrations ofconnected equipment.

Flexible connections shall be air tight and resistant to water and fire.

Flexible connections shall be flitted to isolate fans from equipments and/or ductwork. The connections shall be arranged to permit the renewal of the connection without disturbing the ductwork or the plant. The metal parts of connected equipment shall be separated by not less than sixlunches and installed with sufficient slack to compensate for free movement of fans or spring vibration isolators.

2. SPECLFLCATLON FOR PP EXHAUST BLOWER

The blowers for the fume hoods shall be attached to the scrubbing system.

The exhaust fans supplied and installed shall be of 'Centrifugal Corrosion Resistant' typeand shall be capable of delivering the design flow rate against all duct losses.

The fans shall be robust in construction and suitable for continuous duty operation. Lt shall be mounted with ease of maintenance and shall be installed with proper vibration isolators to minimize vibration transmission to ductwork and support structure.

Fans selected shall be silent and vibration free when running and suitable for outdoor use.

The fan speed shall not exceed 3000rpm.

Aerodynamic performance of the fan shall be tested and comply with 'AMCA' and 'LSO5801' standards.

The casing shall be of self–supporting design, thermoformed (size 400 and below), welded by machine (automatically welded for size 400 and below). The material of construction shall be fire retardant polypropylene (PPs) for fire safety and suitable for use against corrosive 'medium' and a maximum allowable operating temperature of 70˚C.

Impeller material shall be fire retardant polypropylene (PPs) for fan size up to 400 (polypropylene {PP} for fan size 450 and above) suitable for use against corrosive 'medium' and a maximum allowable operating temperature of 70˚C.

A standard hub seal shall be incorporated onto the impeller hub to prevent corrosive 'medium' from contacting the shaft.

The fan shall be driven by a standard TEFC electric motor with class 'F' insulation and class 'B' temperature rise. Motor shall be suitable for outdoor installation with LP65 protection and suitable for operation with 415V/3Ph/50Hz electrical supply. Motor supplied shall be in accordance to LEC standards.

The fans have to be installed with easy access for maintenance. The installation has to be madeby well-trained specialists of the OEM :

The fans have to be erected on vibration absorbers to avoid the transmission of soundand vibrations to the building or foundations.

The vibration absorbers have to be fled to the foundation.

The inlet and outlet ducts have to be connected with flexible sleeves to the fan.

The regulation of standard DLN EN 60204−1 for the electrical installation and theelectrical safety requirements have to be fulfiller.

Start and stop devices shall be easy to operate and have to be marked clearly.

Ln case of condensation liquid occurring lisle the housing, ltr has to be equipped witha condensation drain at the lowest position of the housing and to be connected to a drainage pipe.

For cooling, a sufficient air stream has to be assured.

Lf a fan inlet is not connected to a duct, the inlet must be protected with a grid.

Fans, which are openly accessible, have to be protected with a scatter shield around thehousing.

Test run and commissioning:

Check, whether inlet and outlet are connected to ducts or protected by a protectiongrid.

Check mechanical and electrical safety devices; make sure, they are properly installed.

Check the rotation of the impeller by means of a quick switch on/off of the motor; It must run in the direction as shown on the arrow. Ln case of wrong direction, change the connection of the wires.

To protect the motors against overload, needful overload protection devices should be incorporated. The fans shall never be operated with open

Inlet or outlet. For test runs, the inlet has to be covered with a suitable plate.

The current (Amps) as indicated on the motor data plate shall never exceed. The fan has tobe checked for its smooth running.

3. SPECIFICATIONS FOR MOTOR AND ACCESSORLES

Use an electric motors bullet to LEC standards flange mounted (B5) and Foot mounted (B3), also in ex−protected or multistage versions, for the drive. The impeller hub is coated with aluminum. Power transmission from motor to impeller by means of a directly mounting the impeller on motor shaft. The impeller is fixed on to a flange bearing and the tightening adopter system guarantees secure mechanical connection. Motor Standard LEC three−phase motors in accordance with LEC. Mounting B5 and B3 Available in motor−mounted (LP65) or cabinet−mounted versions. The fan shall be driven by a standard TEFC electric motor with class 'F' insulation and class 'B' temperature rise. Motor shall be suitable for outdoor installation with LP65 protection and suitable for operation with 415V/3Ph/50Hz electrical supply. Motor supplied shall be in accordance to LEC standards. The blower and the motor should be capable of air suction of 2 fume hoods in−−−− with spot extraction and cabinets.	

GAS, UTILITY & DRAIN DISTRIBUTION SYSTEM

TENDERED SPECIFICATIONS	
UTLLLTY & GAS DISTRIBUTION SYSTEMGENERAL: The Gas Distribution System has two independent types of systems namely Bottled Gas System and Compressed Gas System. Utility Services like Raw Water fed from Header line located around the building wall provided by Client. Whereas the Compressed Air, Vacuum, Nitrogen & Chilled Water services are fed from the respective source Equipments located Utility room of Ground level. The Gas Distribution System consists of following: Source points, Compressed Gas Cylinders and accessories like Bull noses, Flexible Hoses, Change over Panel, Cylinder Isolation Valves, Check Valves, Excess Flow Check Valves, and Flash Back Arrestors. Tubs & Tube Fittings, Floor Isolation Valves, Branch Isolation Valves, Point of Use Regulators, Pressure Gauges, Gas Puller, Gas Distribution Panel, All Tubing and fittings are supported by aluminum profile, MS angles and clamps with Nut & bolts. **TECHNLCAL REQULREMENTS:GENERAL:** It is the intent of this specification to provide a high quality gas distribution system for the laboratory usage. **GAS TUBLNG:** Tubing sizes up to 1" and including ¼", ½", ¾"OD should be bright annealed. Tubing with outside diameter larger than 1" OD should be supplied in annealed and pickled condition. Material of Construction (MOC) of the Tubing & Fittings shall be SS304. Tubing hardness should have a max HRB 80. The tubing should be supplied with plugged ends. Tubing should fully annealed, high quality, Stainless tubing as per ASTM A269 or A213, or DLN−17456 &17458 (Class−1). Working Pressure of tubing as listed in ASME B31.3, for ASTM A269 tubing at −20 to 100˚F (−28 to37˚C).	

TUBE FITTINGS:

The fittings shall be of welded type, the fittings shall be capable of holding the maximum workingpressure of the tubing without any leak.

All the fittings end connections shall be compatible to tube of hardness less than or equal to RB 80.

Fittings for the Tubing running above the false Celling, Header & Sub Header shall be Welded type. Fittings for the droppers connected to sub Header shall be Compression type.

Tube to tube jolts and braches are joined by the way of orbital welding up to 1" OD tubes. And Socket welding/Butt Welding to be carried out for the Tubes which are greater than 1" OD.

GAS CYLLNDER CHANGE OVER PANEL:

Single−Stage Gas Panel to reduce cylinder pressure to a certain line pressure for in house use with internal gas purging and Process gas outlet shut−off valve. These Gas Panels are used for Inert, Reactive, Flammable and Oxidizing Gases and gas mixtures.

These gas panels are mounted on a stainless steel panel and consist of a pressure regulator, inlet and outlet pressure gauges, a relief valve and shut−off valves for the process gas. A choice of stainless steel calls or flexible high pressure hoses is available for the connection to the gas cylinder. Provision for contact pressure gauges (accessories) facilitates monitoring of the gas reserves.

Gas panels are permanently installed in the cylinder stock room or cabinet and reduce the cylinder pressure to a lower line pressures. The gas is guided to the point of use via the subsequent piping system. This Gas Panel allows purging to be carried out with internal gas while cylinders are being changed and flushes the atmospheric air from the system; gas purity is maintained and also shuttling−off of gas flow during cylinder change with the panel itself. Standard application for these panels: centralized or decentralized gas supply for highly sensitive analysis devices.

Pressure decreases of the active cylinder (or bundle) below a preset level cause's semi−automatic switch over to the full cylinder side. This is achieved by two integrated regulators (factory set to slightly different delivery pressure levels), connected at their outlet ports. Moving the lever towards the full battery side, this allows disconnecting & replacing the empty cylinder without interrupting the gas supply. The level position always indicates cylinder priority in being discharged.

Technical Details:

Body material	:	Brass
Dimensions (LxHxD)	:	400 x 155 x 240 mm
Purity	:	Max. 6.0
Inlet pressure	:	230 bar
Outlet Pressure range	:	14 bar
Inlet Connection	:	N14 (=NPT ¼")
Outlet Connection	:	N14 (=NPT ¼")

Cylinder Brackets are used to mount the cylinder on Wall to avoid down fall of Gas Cylinder.

VALVES:

BALL VALVES

Ball Valves of required size shall be installed at each source Point of the Service. Ball valve with required sizeshall be considered at shaft opening of each floor.

Type:	Ball type	
Size	½" OD to 1" OD	
MOC:	SS304	
Flow:	Straight (2−Way)	
Seat Material:	Reinforced PTFE	
Rating:	−29˚C @ 1965 kPag to 150˚C @ 1580 kPag.	

Teflon gland packing with Silicone base lubricant and the valves shall be factory tested at 1000 PSLG andcertlflcatlon shall be produced.

PRESSURE GAUGE:

General purpose Stainless Steel Pressure gauges of 63 m dial size to be installed in every Lab/ Bench or special purpose equipments in order to know the pressure rating.

Rating	:	0 − 25 bar
Accuracy	:	63 mm (2 1/2 Ln.): ± 1.5 % of span.
Mounting type	:	Center back mount type.
End Connection	:	¼" Male NPT
Dial Size	:	63 mm (2 ½")
Operating temp.	:	Unfilled: −40 to 140˚F (−40 to 60˚C)
MOC	:	End Connection & Burdon tube will be SS 316, Casing will be SS304.
Temp. Error	:	± 0.4 % for every 18˚F (10˚C) temperature change from 68˚F (20˚C)

GAS PURIFIER:

Gs Pullers are used to get Ultra High purity (UHP) gases. Lt contains Moisture Trap, Hydrocarbon Trap & Oxygen Trap with Mlcron Filters and also Pressure Gauge, Pressure Regulators and Toggle Valve.

Moisture Trap:

Application	: Moisture Removal
Filter Type	: Slice gel / Molecular Sleeve
MOC	: Clear acrylic / safe glass tube
Capacity	: 210 CC
Working Pressure	: 10 Bar
Max. Operating Temp	: 50º C

Hydro Carbon Trap:

Application	: Hydrocarbon Removal
Filter Type	: Activated Charcoal
MOC	: Clear acrylic / safe glass tube
Capacity	: 210 CC
Working Pressure	: 10 Bar
Max. Operating Temp	: 50º C

Oxygen Trap:

Application	: Oxygen Removal
Filter Type	: De−Oxo Chemical catalyst
MOC	: SS316
Capacity	: 210 CC
Working Pressure	: 10 Bar
Max. Operating Temp	: 50º C

Gas Distribution Panel:

Gas Distribution Panel is used where more than one gas required for a single instrument. Lt helps to controls the flow and Pressure of different gases for the particular instruments. The Gas Distribution Panel consists Toggle Valve, Pressure Gauge, Pressure Regulator and Spiral Tubing.

WELDING:

Tube to tube joints and braches are joined by the way of orbital welding up to 1" OD tubes. And Socket welding/Butt Welding to be carried out for the Tubes which are greater than 1" OD.

Orbital Wildling:

Method for joining tubes will be orbital welding, Orbital welding is cleaner, reliable way of joining pipes and purity is guaranteed by orbital welding.

Orbital welding is a mechanism in which the arc from a tungsten electrode was rotated around the tubing weldjoint. The arc welding current was regulated with a control system thus automating the entire process. The result was a more precision and reliable method than the manual welding method is replaced. Orbital welding systems offer computer control where welding parameters for a variety of applications can be stored in memory and called up when needed for a specific application. The skills of a certified welder are thus bullet into the welding system, producing enormous numbers of identical welds and leaving significantly less room for error or defects. Ln the orbital welding process, tubes/pipes are clamped in place and an orbital weld head rotates an electrode and electric arc around the weld jolt to make the required weld.

Radiographic Test for Welds:

Radiographic Testing for Welded Joints of higher size pipes should be carried out.

The beam of radiation must be directed to the middle of the section under examination and must be normal to the material surface at that point, except in special techniques where known defects are best revealed by a different alignment of the beam. The length of weld under examination for each exposure shall be such that the thickness of the material at the diagnostic extremities, measured in the direction of the incident beam, does not exceed the actual thickness at that point by more than 6%. The specimen to be inspected is placed between the source of radiation and the detecting device, usually the film in a light tight holder or cassette, andthe radiation is allowed to penetrate the part for the required length of time to be adequately recorded.

INSPECTLON AND TESTING

Performance Test for Gas System:

A. **Insulation Purging Procedures:**

The sealed tubes after starting the process of cutting and debarring has to be purged with generalpurity nitrogen.

Connect the tubes to the flexible hose of the regulated supply (at 2 bars) and blow the debris for 5 men.

To ensure the purging is totally complete, below the tubes intermittently holding the pressure for few seconds at the end of the tube.

Now use the tube to swage the fitting. And install the tube with the fitting at the required place.

B. **Pre Testing Purging Procedure**

Once the main header and the sub header installation is complete,

check for the misalignment or improper fitting connections.

Connect the regulated pressure from the Nitrogen cylinder and blow the system for 15 mins nonstop.

Start the process again after 15 mins duration and blow the system for another 10 mins.

Reconnect the needle valves and open the port fully.

Start the purging process one more time with the valve open blow the whole system for 30 mins.

Now the system lbs completely purged and now ready for handling over after the pressure test.

Please note purged air must be directed to outside of Lab

.

C. Pressure Testing Procedure

Ensure complete piping is purged with prior to pressure test. Use Nitrogen for leak check. Please notepurged air must be directed to outside of Lab.

- Ensure the system point is not hooked up to the lab equipment.
- Shut−off point of use valve and pressurized system through the cylinder regulator.
- Increase pressure slowly to maintain 30 psi and shut−off the cylinder valve. Observe the pressure gaugefor evidence of pressure drop.
- Lf the pressure drops, trouble−shoot leaking joints by using “Snoop” liquid leak detector rectify asnecessary.
- Proceed to increase pressure to 100 psi lf no leak is detected after 15 mins. Of pressurization at 30 psi.
- Repeat above lf leak is detected.
- Proceed to increase pressure to 1.5 times the working pressure of the system. (Normally system withsame procedure as above.
- Maintain pressure for 12 hours and check for evidence of pressure drop.

D. Preliminary Testing

Preliminary Leak testing will be carried out in two phases:

Pressure decrease method (Pressure testing: 1, 5 times the maximum working pressure). Necessary formats will be used and all relevant data will be recorded during the test. GDS vendor and Management staff of client will jointly witness the test and certify the same.

TLFF Leak detection:

Necessary formats will be used and all relevant data will be recorded during the test. GDS vendor and Management staff of client will jointly witness the test and certify the same.

MATERLAL OF CONSTRUCTLON (M OC):

SLN.	ITEM’S NAME	MOC
01	Change Over Regulator	Brass
02	Line Regulator	Brass
03	Point of Use Regulator	Brass
04	Utility & Gas Tubing	SS 304
05	Tube Fittings	SS 304
06	Hot Water Pipes & fittings	PPR
07	Chilled Water Insulation	Nitrile Rubber
08	Valves	SS304
09	Tubing Support	Mild Steel

	10	U Clamps	Stainless steel		
	11	Clamps	Virgin Polypropylene		
	12	Cylinder Bracket	MS Steel		

PART C: Instruments & Equipment Technical Specification

Microbiology Section:

1. **Laminar Air Flow**

S. No.	Specifications	Requirement	Please Specify whether the quoted model/items meets the specification **(Yes/No)**	Specify Make and Model
1.	**Main body**	Complete body with Stainless Steel		
		304		
2.	**Inner Surface**	Inner Back wall & Side wall made in		
		stainless steel, grade SS 304		
3.	**Work Surface**	Seamless, Scratch-free, high quality		
		18 gauge stainless steel, grade 304		
4.	**Working tray**	Removable stainless steel work		
		surface for easy cleaning.		
5.	**Filter type**	HEPA filter with integral metal guards		
		& frame gaskets. Supply of HEPA filter		
		99.997% at 0.3 micron.		
6.	**Class**	Class 100 or exceeding class 100		
		requirements of FEDERAL standards		
		209E or equivalent ISO standard		
7.	**Primary Filter**	Specially designed pre filter to		
		increase the life of HEPA filter		
8.	**Ergonomic tilt**	Exceptionally comfortable 10 deg		
		ergonomic design improves comfort,		
		prevents user fatigue & promotes safe		
		working techniques.		
9.	**Front control**	Provided to avoid exposure of UV		
	panel	Light & Lamp outside, making eyes		
		more comfortable.		
10.	**Front sash door**	Manual sliding sash door made up of		
		Imported poly carbonate sheet or		
		toughened glass with sloping front for		
		better access of samples. Front sash		

		door height can be easily adjusted as		
		per required by end-user. The		
		transparent sash door maximizes light		
		& visibility inside the cabinet, providing		
		a bright & open working environment. The closing/ opening of front door is integrated with the UV ON/OFF. The UV will automatically switch “OFF” when the sash door is opened & switch “ON” when door is closed to avoid accidental exposure of UV light to the operator.		
11.	Air velocity	90 ft/min ± 10.		
12.	Air volume	500 cfm & above		
13.	UV Light	Available with timer		
	programming			
14.	Ultra violet tube light	Germicidal i.e. 254 nm		
15.	Electrical socket	Internal socket inside the chamber, 5/15 Amp		
16.	Illumination of work surface	Fluorescent tube light (intensity > 600 lux) provides excellent illumination for work surface & reduces operator fatigue. Fluorescent tube light in set behind front control panel.		
17.	LCD Screen Display	Digital Microprocessor controlled for Operating Fluorescent, UV Light & Blower with Audio and Visual alarm for HEPA filters life. And also for Static Pressure Measurement of HEPA Filter. Conveniently located display on outside of the Laminar Air Flow for easy use &also easy to reach from a seated working position.		
18.	Sleep Mode Operation	Automatically blower speed reduced up to 30%, this will help to save		
		energy as well as help to maintain		
		sterile work area during Biosafety		
		Cabinet is not in operation		
19.	Intelligence	Safety purpose Audio & Visual alarm		
	Alarm	for air fluctuation and for life of the		
	System	HEPA filter and UV light		
20.	Working Noise level	Low/ should be < 65 dB		
21.	Electronic/ Electrical	From clean chamber to give better contamination free results.		
	panel			
22.	Electrical safety	Electrical components used are standard for better electrical safety for the operator.		
23.	Power supply	230 V ± 15%, 50 Hz ± 3%		

24.	Arm Rest bar	To avoid contamination from outside to inside contamination & for easy working with comfort. Secure & comfortable armrests enhance your comfort during extended work sessions		
25.	Drainage port	Provide beneath work surface to facilitate easy & better cleaning of the interior & handling of spillage inside the chamber.		
26.	Blower-Motor Assembly	Dynamically & statistically balanced aluminium centrifugal impeller driven by single phase, 1400 RPM motor. Double inlet blower fitted in such a way to reduces vibration & noise. Blower is positioned in such a way that, to create an even filter loading, it helps to prolong the life of HEPA filters. Provide uniform airflow by adjusting working voltage of fan.		
27.	Certificates	IQ, OQ & PQ Certificates with given Calibration & Traceability certificate provided with NABL accredited. Factory tested DOP test certificate provided.		
28.	Trolley (Base Stand)	Provided with lockable castor wheels		
29.	Certification	Product must be ISO 9001 : 2015 Certified CE Marked : CE marked product GMP Certified		
30.	Applicable Standards	EN ISO 14971:2012/EN ISO 13485: 2012/EN 980:2008/EN 1041: 2008/EN 61010-1:2010/EN61326-1:2013/EN 12469:2000.		
31.	Size	4'x2'x2'		
32.	Warranty	Warranty for 02 years after satisfactory installation and working excluding consumable parts and accessories.		

2. Bio Safety Cabinet Class II Type B2

S. No.	Specifications	Requirement	Please Specify whether the quoted model/items meets the specification **(Yes/No)**	Specify Make and Model
1.	**Size**	4'x2'x2'		
2.	**Main body**	Constructed in Mild Steel or SS with Epoxy		
		Powder Coated		

3.	**Inner Surface**	Inner Back wall & Side wall made of stainless steel SS 304		
4.	**Work Surface**	Working area minimum 4 ft (w) x 2 ft (h) x 2ft Interior work area to be from a single piece of SS-304 grade stainless-steel with large radius (joint free) corners to simplify cleaning. The cabinet work area must have no welded joints, which collect contaminants or rust.		
5.	**Working tray**	Cabinet should be balanced with base stand with castor wheel and lock. Stand approx of 711 mm height from ground. Single Piece Wall and work tray. Raised arm rests. Drain Pan / Drain valve or cock for cleaning spills in case work tray is fixed		
6.	LCD Display	Digital Microprocessor Control System for Operating Fluorescent, UV Light & Blower. Continuously display true value of inflow as well as down flow velocity. Conveniently located display on outside of the Biosafety Cabinet for easy use & also easy to reach from a seated working position		
7.	Air Flow pattern (through ULPA/HEPA)	Air Flow pattern (through ULPA/HEPA) 100% of the exhausted air		
8.	Class	Class 100 or exceeding class 100 requirements of FEDERAL standards 209E or equivalent ISO standard		
9.	Sleep Mode Operation	Automatically blower speed reduced up to 30%, this will help to save energy as well as help to maintain sterile work area during Biosafety Cabinet is not in operation. Special precautions are taken so that if by chance the exhaust blower is not working, buzzer will become active		
10.	Supply ULPA /HEPA Filter	Typical Efficiency of ≥99.999% for particle size between 0.1 to 0.3 microns		
11.	Exhaust HEPA Filter	Typical efficiency of ≥99.99% at 0.3 microns		
12.	Intelligence Alarm System	Safety purpose Audio & Visual alarm for air velocity fluctuation and for life of the HEPA filter and UV light		
13.	Ultra violet tube light	Germicidal i.e. 254 nm		
14.	Ultra violet life meter	Continuously display UV Hour on display		

15.	UV Light programming	Available with timer & UV Hour meter to avoid operator risk		
16.	Interlocking UV	The closing/opening of front door is integrated with the UV ON/OFF. The UV will automatically switch “OFF” when the sash door is opened & switch “ON” when door is closed to avoid		
		accidental exposure of UV light to the operator.		
17.	Certification	An ISO 9001: 2015 Certified Company CE Marked : CE marked product GMP Certified Product. Test Certificate for Mini-Pleat HEPA Filters Calibration Certificate for Pressure Gauge Calibration Certificate for Air Velocity Anemometer		
18.	Warranty	Warranty for 02 years after satisfactory installation and working excluding consumable parts and accessories.		

3. **Autoclave Vertical**

S. No.	**Specifications**	**Requirement**	Please Specify whether the quoted model/items meets the specification **(Yes/No)**	Specify Make and Model
1.	**Application**	A vertical steam sterilizer to provide safe, economical and effective sterilization for laboratories that do not want to compromise on quality, safety and reliability and sterilize liquids, such as nutrient media and buffer solutions. Solid items such as pipettes, tubes and filters and Glassware and plastic articles can also be sterilized.		

2.	**Chamber**	Vertical loading type chamber with service basket and complying to the strictest international directives and standards equipped with • Steam collection bottles to remove most of the steam during operation • Ware inlet and outlet valve • Drain valve for cleaning or changingwith fresh water • Constructed with SS-304 with superior corrosion resistance to water and steam • High temperature and pressure resistant silicon gasket • Built-in analog pressure gauge • Manual pressure release valve • Wheels/casters for easy transport. Chamber inner material should be SS304 double/triple walled with steam jacket		
3.	**Safety Device**	Water level sensor, current leakagebreaker, lid interlock, over heat & pressure Prevention, open temperature sensor detection & safety valve. To be provided with pressure control switch.		
4.	**Heat source**	2.5-3 kW electric heater		
5.	**Gauges**	Should have a water level gauge Analog gauges for measuring inner andouter steam pressure. Should have an inner temperature indicator.		
6.	**Chamber size/Capacity**	Approx. 80-120 L		
7.	**Display**	Fully Automatic PID Control ± 0.1°C LED display for temperature and remaining time		
8.	**Operating Temperature and accuracy**	Maximum125- 130°C Temperature Accuracy: ± 0.3 °C at 121 ° CMust have Temperature calibration		
9.	**Operating pressure and gauge**	15 -20psi ANALOG PRESSURE GAUGE (0 - 40 psi pressure gauge) indicating actual pressure		
10.	**Timer**	Automatic START/STOP timer		

11.	**Safety warnings andalarms**	A cycle cannot start if the door is open or not properly locked. The door cannot unlock until chamber pressure reaches room pressure. Over-Temperature Cut-Off with audio visual alarm. Low Temperature Warning: If the temp. stays below 121°C for more than 5 seconds. Low Heat Warning: If the temp. does not reach the sterilization temperature during the set periods. Over-Pressure Cut-Off with audio visual alarm. Over Current Cut-off with audio visual alarm. Low Water Level heater cut-off and ALARMS		
12.	**Accessories**	Perforated corrosion free baskets made upof SS 304 (3-4 Nos.) that are stackable		
13.	**Calibration certificates**	Certificate from ISO 17025 accredited labfor temperature, pressure gauges & timer.		
14.	**Operation and maintenance training component**	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on — site comprehensive training for a minimum of two scientific personnel operating the system and support services till customer satisfaction		
15.	**Certificates Performance**	Should be FDA/CE/BIS approved product. Manufacturer/ Supplier should have ISO		

	and safety standards (specific tothe device type); Local and/or international	13485 certification under ISO 9001for quality standards. Electrical safety conforms to the standards for electrical safety IEC 60601-General requirements (or equivalent BIS Standard)/Certified to be compliant with IEC 61010-1/ IEC 61010-2-40 for safety		
16.	**Supplier/ Manufacturer**	Must be ISO/BIS certified for quality		
17.	**Service Support Contact details (Hierarchy Wise; including a toll free/landline number)**	Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to bedeclared by the manufacturer;		
18.	**Warranty**	Warranted for 02 years after satisfactory installation and working excludingconsumable parts and accessories.		

04 and 05. Incubators: 1) Ambient to 70 °C and 2) 5 °C to 50°C

S. No.	**Specifications**	**Requirement**	Please Specify whether the quoted	Specify Make and Model

			model/items meets the specification **(Yes/No)**	
1.	**Application**	For incubation of organisms, and also for conditioning of heat sensitive media and to provide an optimal, homogeneous, temperature uniformity and stability to ensure that protocols are fully reproducible –		
2.	**Material of construction**	• Seamless Round Corner • Double walled construction with complete inner chamber made of Corrosion resistant stainless steel (SS304) • Outer chamber should be of steel sheet finished with powder coated point Insulation to maintain desired temperature • Inner glass door • Inner chamber should be fabricated with ribs for adjusting shelves to convenient height and shelves to be supplied • Shelves should be made of polished stainless steel sheet as per chamber		
3.	**Capacity**	• 150- 200 liters		
4.	**Temperature range**	• Temperature should be Microprocessor controlled with range 1) ± 2˚ C Ambient to 70˚ C and 2) 5 °C to 50°C • Accuracy: ± 0.3˚ C • Over-Temperature Cut-Off with audio/ visual alarm • Low Temperature Warning alarm		
5.	**Unit**	• Air ventilators to be provided on both sides • The equipment should be provided with microprocessor controlled digital display • Temperature homogeneity between top and bottom shelves should be maintained by forced circulation		

6.	**Safety**	• Over Temperature Protection,		

		Over Current Leakage Breaker		
7.	**Calibration**	Certificate from a ISO 17025 accredited lab for 3 different temperature points should be attached		
8.	**Operation and training component**	• The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on — site comprehensive training for a minimum of two scientific personnel operating the systemtill customer satisfaction		
9.	**Certificates Performance and safety standards (specific to the device type);Local and/or international**	• Should be FDA/CE/BIS approved product. • Manufacturer / Supplier should have ISO 13485 certification under ISO 9001f or qualitystandards. • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent BISStandard)		
10.	**Supplier/ Manufacturer**	• Must be ISO certified for quality		
11.	**Service Support Contact details (Hierarchy Wise; includinga toll free/landline number)**	• Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer		
12.	**Recommendations or warnings**	• Any warning signs would be adequately displayed		
13.	**Warranty**	• Warranted for 02 years after satisfactory installation and working excluding consumable parts and accessories.		
14.	**Service contract clauses, including prices**	• List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period		

06. Digital colony counter

S. No	Specifications	Requirement	Please Specify whether the quoted model/items meets the specification **(Yes/No)**	Specify Make and Model
1.	**Application**	For fast and accurate bacterial or mold colony counting and to aid in determining counts of colony clusters and exceedingly large or small colonies, and can accommodate multiple dish sizes or formats.		
2.	**Material of construction**	Full Stainless steel fabricated body with duly heat cured epoxy coating.		

3.	**Display and counting**	It should consist of • Digital display up to 4 digits with confirmation by audible tone. • It should consist of Magnifying lens (greater than 1.5X magnification with digital marking pen) • Accepts petri dish up to size 120 mm diameter with a centeringadaptor for standard 90mm petri dish • Glare free viewing low energy bright LED's • Appropriate background viewing translucent and difficult to see colonies. • Zero reset button		
4.	**Operation and training component**	• The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on — site comprehensive training for a minimum of two scientific personnel operating the system tillcustomer satisfaction		
5.	**Certificates Performance and safety standards (specific to the device type); Local and/or international**	• Should be FDA/CE/BIS approved product. • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent BIS Standard		
6.	**Supplier/ Manufacturer**	• Must be ISO certified or quality		
7.	**Service Support Contact details (Hierarchy Wise; including a toll free/landline number)**	• Contact details of manufacturer, supplier and local service agent tobe provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer;		
8.	**Recommendations or warnings**	• Any warning signs would be adequately displayed		
9.	**Warranty**	• Warranted for 02 years after satisfactory installation and working excluding consumable parts and accessories.		

10.	**Service contract clauses, including prices**	• List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached;		

07. Lab Blender/Homogenizer

S.No.	Specifications	Requirement	Please Specify whether the quoted model/items meets the specification **(Yes/No)**	Specify Make and Model
1.	**Application**	This is required for the quick and safe		
		preparation of samples before the		
		microbiological and chemical analysis.		
		Accepts all bag sizes 50 to 400 ml.		
		100% stainless steel chamber. 75w		
		(power consumption reduced to 30%		
		to 50%)		
2.	**Motion**	Variable Paddle type		
3.	**LCD**	User friendly control, Auto-Manual		
	Digital	Mode, Programmable time.		
	Display			
4.	**Door**	Removable & Autoclavable door.		
		Front : Glass Door.		

5.	**Bending Capacity**	From 50 — 400 ml (Sterile with or without filter)Adjustable electronic timer from 10 sec to 3 min Continuous mode available		
6.	**Brushless Motor**	No wearing parts, Less power consumption.		
7.	**Safety**	Electronic circuit breaker which stop the cycle in case of resistant samples motor protection. No access to the homogenization chamber during the operation		
8.	**Easy cleaning**	removable paddles and easy accessto the stainless steel homogenizing chamber		
9.	**Unit**	No vibration. Ensured efficiency irrespective of the sample size (25- 150g), Built-in waste drawer for spillage collection. 100% stainless steel chamber. Smooth surfaces and rounded corners Progressively & gently stroked samples for an optimal blending. Not “up to” but “from” 28 kgs of pressure by paddle!		
10.	**Warranty**	Warranted for 02 years after satisfactory installation and working excluding consumable parts and accessories.		

06. Serological Water Bath (Capacity 12 litres)

S.No.	**Specification**	**Requirement**	Please Specify whether the quoted model/items meets the specification**(Yes/No)**	Specify Make and Model
1.	**Application**	The water bath is for routine use in microbiology protocols as well for solubilisation with precise temperature control.		

2.	**Material of construction**	• Rounded, seamless stainless steel bath to prevent rust, chemical damage andcontamination. • Powder coating like epoxy coating exterior for easy cleanup • corrosive resistant stainless steel Gable drip free lid		
3.	**Unit**	• Microprocessor controlled digital display. • Instrument should have a separate operable drip free bath cover; • Carrier racks should be given for flasks and test tubes racks. • Convenient water bath drains. • Water bath protective media should be there to prevent contamination and formation of algae. • Easy cleaning		
4.	**Temperature**	• Temperature Range: Ambientto 90°C • Temperature Accuracy: ± 0.3 °C • Digital LED display for		

		operating status of TEMP • Over-Temperature Cut-Off • Temperature calibration function		
5.	**Alarms**	• Audible warning safety signals should be there for high/low temperature warnings • Low liquid level		
6.	**Calibration**	• Certificate from a ISO 17025accredited lab for 3 different temperature points		
7.	**Operation and training component**	• The Manufacturer/ Supplier will have to carry out successful Installation at the laboratory premises(wherever the system has to be installed) and provide on — site comprehensive training for a minimum of two scientific personnel operatingthe system till customer satisfaction		
8.	**Certificates Performance and safety standards (specific to the device type); Local and/or international**	• Should be FDA/CE/BIS approved product. • Manufacturer / Supplier should have ISO 13485 certification under ISO 9001for quality standards. • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent BIS Standard)/Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety		
9.	**Supplier/ Manufacturer**	• Must be ISO certified for quality		
10.	**Service Support Contact details (Hierarchy Wise; including a toll free/landline number)**	• Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer;		
11.	**Recommendationsor warnings**	• Any warning signs would be		

		adequately displayed		
12.	**Warranty**	• Warranted for 02 years after satisfactory installation and working excluding consumable parts and accessories.		

08. Analytical Balance

S.No.	Specifications	Requirement	Please Specify whether the quoted model/items meetsthe specification**(Yes/No)**	Specify Make and Model
1.	**Application**	Required to measure mass to a high degree of precision with a **weighing** capacity up to 220 g and a readability of 0.1 mg and protected by a draft shield or an enclosure.		

2.	**Operational Requirements**	It should have • Microprocessor basedsingle pan top loading analytical balance with high accuracy andprecision. • Digital display • Balance to be provided with transparent case. • Weighing with automatic and manual start and provision for data interface.		
3.	**Technical Specifications**	• Weigh accurately up to 3rd decimal place. • Fully automatic time and temperature controlled internal calibration and balance should be capable to adjust itself Auto zero setting. • Weighing capacity up to 220g • Readability 0.1 mg, Repeatability 1 mg or less.		
4.	**Balance should have**	• Fast dismantling chamber for easy cleanup		
5.	**Environmental factors**	• Safety for electromagnetic compatibility. • The unit shall be capable of operating in ambient temperature of 20-30^{O}C and relative humidity of 80%.		
6.	**Accessories**	• All necessary accessories should be provided with unit.		
7.	**Calibration certificate**	Certificate from a ISO 17025 accredited lab for 3 different weights.		
8.	**Operation and training component**	• The Manufacturer/ Supplier will have to carry out successful Installation at thelaboratory premises (wherever the system hasto		

		be installed) and		
		provide on — site comprehensive trainingfor a minimum of two scientific personnel operating the system till customer satisfaction		
9.	**Certificates Performanceand safety standards (specific to the device type); Local and/or international**	• Should be FDA/CE/BIS approved product. • Manufacturer and Supplier should have ISO 13485 certification under ISO 9001for quality standards. • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (orequivalent BIS Standard)/Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety		
10	**Supplier/ Manufacturer**	• Must be ISO certified for quality		
11	**Service Support Contact details (Hierarchy Wise; including a toll free/landline number)**	• Contact details of manufacturer, supplier and local service agent tobe provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer;		
12	**Warranty**	• Warranted for 02 years after satisfactory installation and working excluding consumable parts and accessories.		

10. Upright Frost Free Vertical Deep Freezer (-20 °C)

S. No.	Specifications	Requirement	Please Specify whether the quoted model/ items meetsthe specification **(Yes/No)**	Specify Make and Model
1.	**Application**	For storage of various biological products including, ATCC/MTCC/ Microbial cultures, enzymes, chemicals or material testing components for a longer period of time		
2.	**Unit**	• Interior: Full stainless steel which can be easily cleaned and eliminates any possibility of cross contamination • Cooling Type: Direct cooling • Should be Vertical(Upright)type • Microprocessor-based • Frost Free • Refrigerant: CFC – Free • Easy to read, LED control panel and alarm status with integrated diagnostics • Doors with key lock • Castors for easy movability		
3.	**Capacity**	Capacity: 250 L or higher with a combination of sealed 5-7 pullout drawers / shelves of different sizes that can be adjusted for storage flexibility		
4.	**Temperature**	• Range - 10 ~ - 20 °C with temperature controller • Digital temperature display • LED Display for temperature and temperature history which can be downloaded via a USB port • Calibration facility		
5.	**Alarms**	Acoustic/visual Safety alarms for • High/low temperature, • door ajar and • malfunction system alarms		
6.	**Optional Accessories**:	Racks for 50 mm boxes (incl. dividers),Racks for 75 mm boxes(incl. dividers)		
7.	**Voltage stabilizer**	Suitable and compatible voltage stabilizer		

8.	**Calibration**	Certificate from an ISO 17025 accredited lab for 3 differenttemperature points.		
9.	**Operation andtraining component**	• The supplier will have to carry out successful Installation at thelaboratory premises (where ever the system has to be installed) and provide on — site comprehensive training for aminimum of two scientific personnel operating the system till customer satisfaction		
10.	**Certificates Performanceand safety standards(specific to the device type); Localand/or international**	• Should be FDA/CE/BIS approved product. • Manufacturer/ Supplier should have ISO 13485 certification under ISO 9001for quality standards. • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent BIS		
		Standard)/Certified to be compliant with IEC 61010-1, IEC 61010-2- 40 for safety		
11.	**Supplier/ Manufacturer**	• Must be ISO certified for quality		
12.	**Service Support Contact details (Hierarchy Wise; including a toll free/landline number)**	• Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer;		
13.	**Recommendations or warnings**	• Any warning signs would be adequately displayed		
14.	**Warranty**	• Warranted for 02 years after satisfactory installation and working excluding consumable parts and accessories.		
15.	**Service contract clauses, including prices**	• List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached;		

16.	**Operating manuals, service manuals, ot hermanuals**	Should provide 2 sets (hardcopy andsoft-copy) of: - • User, technical and maintenance manuals to be supplied in English languagealong with machine diagrams; • List of equipment and procedures required for local calibration and routinemaintenance; • Service and operation manuals (original and copy) to be provided; • Advanced maintenance tasks documentation; • Certificate of calibration and inspection		

11. UV-VIS Spectrophotometer

S. No.	Specifications	Requirement	Please Specify whether the quoted model/items meets the specification **(Yes/No)**	Specify Make and Model
1.	**Application**	UV-Vis The system should be capable to measure all colorimetric based parameters in food and watersamples as per FSSAI requirementsincluding Enzyme assays, Kinetic assays and scans		
2.	**System**	A fully automated spectrophotometer with double beam optics with pre-programmed applications using conventional quartz / glass/plastic cuvettes with all the required accessories.		
3.	**Operation keys**	1. Instrument should operate immediately after switch on with no warming uptime 2. Should be automatically programmed with on-board touch screen & soft keys 3. Capable to store method with analysis:> 100 methodprograms on the instrument, >1000 results with data, evaluation results and used parameters		
4.	**Optical Design**	• Double Beam with sampleand referencecuvettepositions; Czerny-Turner Monochromatic/Holographic grating with sealed optics • Reference Compartment Should accommodate cells up to 10 mm path length asstandard feature		
5.	**Light Source**	• Halogen lamp for Visible range and Deuterium Lamp for UV range or Xenon Flash Lamp • Light source should be automatically selected as perwave length required.		

6.	**Detector**	Silicon Photodiode dual detector/PMT		
7.	**Scan Ordinate Modes**	Absorbance, % Transmittance, %Reflectance		
8.	**Resolution**	0.1nm or better.		
9.	**Wavelength Range**	190 –1100 nm		
10.	**Wavelength Accuracy**	± 0.3nm or better for entire range		
11.	**Wavelength Repeatability**	± 0.1nm or better		
12.	**Scanning Speed**	Selectable Variable wavelengthscan rate1nm/min to 3000 nm/minor better		
13.	**Photometric Range**	≥ 3.5A or better		
14.	**Photometric Accuracy**	0.5 A: ± 0.004A or better; 1A: ± 0.006A or better; 2A: ± 0.010A or better.		
15.	**Noise**	0A: ≤ 0.00006 A or better at 500nm/700 nm		
16.	**Drift**	< 0.0005 A/hr (500 nm, 1 hourwarm-up)		
17.	**Baseline flatness**	± 0.0005 Abs or better		
18.	**Application Software**	In built Software with large LCD display should be user friendly & simple for data handling with feature like easy to use reportgenerator, real time display of concentration, time scan, photometric mode, single/multi- wavelength, capability for event recording (e.g., addition of reagents). Should be able to connect a USB keyboard, mouse and printer for operational convenience. Software should have built in or provision to build: a. Methods:		

		• Absorbance with one or more wavelengths, • Scans, Nucleic acids,Proteins, OD 600, • Evaluation: via factor, standard and calibration curve • Dual wavelength with subtraction and division evaluation b. Method dependentevaluation: • Absorbance, concentration via factor and standard • Concentration via standard series using Linear regression, Nonlinear regression with 2nd and 3rddegree polynomials • Spline analysis, • Linear interpolation (point to point evaluation) • Absorbance allocation via subtraction and division • Ratio 260/280, 260/230, Molar concentration and total yield for nucleic acids. **The software should be 21CFRpart 11 compliant**.		
19.	**Accessories andspares**	• One pair each of 1 and 3 ml quartz cuvettes of 10 mmpath length • One pair each of 1 and 3 ml glass cuvettes of 10 mm path length • Cuvette holder • Holmium oxide glass filters for wave length calibration. • NIST traceable Potassiumdichromate		
20.	**Computer and printer**	Latest configuration factory set branded PC system with 22-23'' Full HD Monitor with printer –B/W — duplex- laser-legal, A4- 1200 dpi-up to 21 ppm –capacity with network card		
21.	**UPS**	Suitable UPS with 60 minutesbackup power		
22.	**Calibration**	Certificate from an ISO 17025accredited lab spectral calibration.		
23.	**Compliance**	**IQ/OQ/PQ** of instrument and Software should be provided along with document		

24.	**Operation and training component**	• The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on–site comprehensive training for a minimum of two scientific personnel operating the system till customer satisfaction		
25.	**Certificates Performance andsafety standards (specific to the device type); Localand/or international**	• Should be FDA/CE/BIS approved product. • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent BIS Standard)/Certified to be compliant with IEC 61010- 1, IEC 61010-2-40 for safety		
26.	**Supplier / Manufac turer**	• Must be ISO certified forquality		
27.	**Service Support Contact details (Hierarchy Wise;including a toll free/landline number)**	• Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to bedeclared by themanufacturer;		
28.	**Recommendati onsor warnings**	• Any warning signs would beadequately displayed		
29.	**Warranty**	• Warranted for 05 years after satisfactory installation andworking excluding consumable parts and accessories.		
30.	**Service contract clauses, includingprices**	• List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached;		

31.	**Operating manuals, service manuals, other manuals**	Should provide 2 sets (hardcopyand soft-copy) of:- • User, technical and maintenance manuals to be supplied in English language along with machine diagrams; • List of equipment and procedures required for local calibration and routine maintenance; • Service and operation manuals (original and copy)to be provided; • Advanced maintenance tasks documentation; • Certificate of calibration andinspection		

12. Binocular Microscope

S.No.	Specifications	Requirement	Please Specify whether the quoted model/items meets the specification(Yes/No)	Specify Make and Model
1.	**Application**	A System complete with illumination system is required. For viewing individual cells, even living ones with high magnification		
2.	**Body**	• Body-Single mold sturdy stable base stand, inclined Binocular body 30 °,360º rotatable head with focus adjustment controls. • A durable textured acid resistant finish • All optical parts including objectives, eye pieces and prismsshould have anti- reflective coating which also gives anti- fungal property.		
		• All metallic parts should be corrosion- proof, acid proof andstain-proof.		

3.	**Eye piece**	• Highest quality 10 X/20mm wide angle anti fungus field eyepiece. One with pointer. Diopter adjustment must be present on both eye pieces. (the image of the object as seen through the binocular eyepiece should be well defined centrally in at least 2/3 field of view) • Achromatic, wide field, 10 x with inbuilt pointer. • The eyepiece should be aplanatic and have a minimum field number of 18 Diopter adjustment must be present on one/ both eye pieces or on the eye piece tube.		
4.	**Optical system**	• Optical system should be infinity corrected. • Built-in LED light source with white light with intensity control and LED life of more than 10, 000Hrs.		
5.	**Objective**	• Parfocal, antifungal coated 4x, 10x, 40x and 100x (oil immersion) with semi planner achromatic correction. • Objective should be well centered even if their position on turret is changed. • 10x and 40x objectives should have numerical apertures of 0.25 and 0.65 respectively. • 100 should have numerical aperture of 1.25 and should be of oil immersion. • Unbreakable containers to be provided for storing the objectives. • All objectives should be wide field, achromatic and par focal.		
6.	**Nose piece**	• Backward tilted revolving nose piece suitable to accommodate four objectives with click stop • It should be provided with rubber ribbed grip for easy rotation mounted on a precision ball bearing mechanism for smooth and accurate alignment. Extra ports if any should be fitted with dust& fungal proof metallic/ebonite caps.		
7.	**Focusing:**	• Coaxial coarse and fine focusing knob, capable of smooth, fine focusing movement sensitivity; minimum: 300 microns; focusing stop for slide safety.		

8.	**Stage**	• Stage uniformly horizontal, mechanical stage having dimensions of length 140 mm (+/- 20mm) with fine Vernier graduations (minimum reading accuracy of 0.1mm). • It should be designed with convenient sub-stage vertical coaxial adjustment for slide manipulation. • The stage should have ball-bearing arrangement to allow smooth travel in transverse directions i.e. 80 mm (+/- 5mm) and front to backdirection, 50mm (+/- 5mm).		
9.	**Sub-stage condense r**	• Abbe-type condenser with numerical aperture (N.A.) 1.25 focusable with rack and pinion arrangement incorporating a spherical lens and an iris- diaphragm		
10.	**Sub-stage illuminator**	• The system should have a build-in variable light source (Illuminator). • This light source should have a 20 W, 6 V Halogen lamps. • The system should be provided with a step down transformer and an on- off switch and intensity control. • The lamp should be provided with a lamp socket which has the facility or easy replacement of the bulb		
11.	**Power supply& protection**	• Voltage 220 V AC, 50Hz.should have one on-off power switch • A plano-concave mirror in fork mounting should be supplied which would be attachable to the base for field use when power is notavailable. • Should have over-charging cut-off		
		with visual symbol		
12.	**Battery backup**	• Minimum 1Hour		
13.	**Operating a ndstorage conditions**	• Capable of operating continuously at ambient temperature of 10 to 50 ° C and relative humidity of 15 to 90% in ideal circumstances. • Storage condition: Capable of being stored continuously in ambient temperature of 0 to 50 °C and relative humidity of 15 to 90%		

14.	**Manual Accessories**	• Working manual should be providedwith each microscope. • Immersion oil 25 ml x2 vials • lens tissue paper 2 rolls or boxes) • Lens cleaning solution (100ml x 2 bottles) • One anti-static cleaning brush. • The unit shall be capable of being stored continuously in ambienttemperature of 0 -50 deg C and relative humidity of 15-90%.		
15.	**Digital camera**	• 5 megapixel scientific grade (even at dim light) colour CCD camera along with image capture and analysis software and c-mount adapter. Resolution at least 2448 x 1920 effective pixel (4 x 4 binning and 2 x 2 binning) and 10 bit digitization. • Microscope should come alongwith PC (i5 6200U processor, 6 GB RAM, 1 TB HDD, DVR R/W, LED 20"). With UPS (minimum offline backup of 30 minutes).		
16.	**Certificates Performance and safety standards (specific to thedevice type); Local and/or international**	• Should be FDA/CE/BIS approved product. • Manufacturer and Supplier should have ISO 13485 certification under ISO 9001for quality standards. • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent BIS Standard)/Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety		
17.	**Supplier/ Manufactur er**	• Must be ISO certified for quality		
18.	**Service contract clauses, includin gprices**	• List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached;		
19.	**Operating manuals, service manuals, other manuals**	Should provide 2 sets (hardcopy and soft-copy) of:- • User, technical and maintenance manuals to be supplied in English language along with machine diagrams; • List of equipment and proceduresrequired for local calibration and routine maintenance; • Service and operation manuals (original and copy) to be provided; • Advanced maintenance tasks documentation; • Certificate of calibration and inspection		

20.	**Warranty**	• Warranted for 02 years after satisfactory installation and working excluding consumable parts andaccessories.		
21.	**Operation and maintenance training**	The supplier will have to carry out successful installation at our laboratory premises (where ever the system has to be installed) and provide on — site comprehensive training for scientific personnel operating the system and support services till customer satisfaction with the system.		

13. Howard Mold Counter

S.No.	Specification	Requirement	Please Specify whether the quoted model/items meets the specification	Specify Make and Model
			(Yes/No)	
1.	**Application**	It is use in determining mold counts (is used mold fibers and spores) in tomato products and for mold counting in food quality control applications for other fruit based preparations and **mold** mycelia in butter and cream..		
2.	**Counting chamber**	Constructed entirely of glass. Centre of glass should contain a 15x20mm rectangle that is flanked by 0.1 mm shoulders on each side to support cover glass. Rectangle and Cover glass should have optically plane surfaces. Facilitiesfor calibration of microscope		
3.	**Eyepiece micrometer**	Ruled into squares (grid), each of which isequal to1/6 of the diameter of the eyepiecediaphragm opening		
4.	**Cover slips**	Thin - 28mm x 33mm x 0.5mm - 2 Nos Thick - 28mm x 33mm x 1.0mm - 2 Nos		
5.	**Certificates Performance and safety standards (specific to thedevice type); Localand/or**	• Should be FDA/CE/BIS approvedproduct.		

	international			
6.	**Service contract clauses, including prices**	• List of all spares and accessories (including minor) with part numbers and price, required;		
7.	**Demonstrati onand training**	The supplier will have to carry out successful demonstration at our laboratory premises (wherever the system has to be installed)and provide on — site comprehensive training for scientific personnel operating the system till customer satisfaction with the system.		
8.	**Warranty**	• Warranted for 02 years after satisfactory installation and working excluding consumable parts andaccessories.		

14. Refrigerated Centrifuge

S. No.	Specifications	Requirement	Please Specify whetherthe quoted model/items meets the specification (Yes/No)	Specify Make andModel
1.	**Application**	A Multi-functional, general purpose High speed refrigerated bench top centrifuge with both fixed angle and swinging bucket rotors for sedimentation of samples with easy lift and safety lid		

2.	**Base unit**	• Table top centrifuge with maintenance free brushless motor and have low access height • CFC free refrigerant • LCD Digital Display of time, speed and Temperature and run conditions • Compatible with all fixed angle and swinging bucket rotors • **Automatic rotor recognitionfacility** • Automatic imbalance detection and cut-off • Should be programmable with easy preset programs for fast temperature for pre- cooling and short spin. • Should have motorized lid lock system		
3.	**Temperature range**	• -5ºC to 40ºC, $4^{O}C$ should be maintained at highest speed		
4.	**Speed**	• Maximum speed: 6000 to 8000xg RCF with 6 x 50 mL Fixed angle rotoror better		
5.	**Rotors**	1. **Fixed Angle Rotor** for 6 ×50 ml Falcon tube with 8 adapters for 15 mL conical bottom culture tubes/falcon/oakridge 2. **Rotor for 1.5-2.0 mL** Eppendorftubes (24 places or better) and ada**ptors** for 0.2and 0.5 mL tubes 3. **Deep-well micro plates r**otor for 96 well plates		
6.	**Centrifuge tubes**	• To be provided with suitable 15 mL autoclavable screw capped tubes – 1 Packet/500Pc • 1.5 ml to 2ml – 1 packet /500 pc and 50 mL autoclavable screw capped tubes - 1 Packet/500Pc		
7.	**Power requirement**	• 220 v to 240 v -50 Hz If a voltage stabilizer is required, it should be supplied along with the unit		
8.	**Voltage stabilizer**	• Suitable voltage stabilizer to beprovided		
9.	**Certificates Performance and safety standards (specific to the device type);Local and/or international**	• Should be FDA/CE/BIS approved product. • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent BIS Standard)/Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety		

10.	**Supplier/ Manufacturer**	• Must be ISO certified for quality		
11.	**Service contract clauses, including prices**	• List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached;		
12.	**Operating manuals, service manuals, other manuals**	Should provide 2 sets (hardcopy and soft-copy) of: - • User, technical and maintenance manuals to be supplied in English language along with machine diagrams; • List of equipment and procedures required for local calibration and routine maintenance; • Service and operation manuals(original and copy) to be provided; Advanced maintenance tasksdocumentation; • Certificate of calibration and inspection		
13.	**Warranty**	• Warranted for 02 years after satisfactory installation and working excluding consumable parts and accessories.		
14.	**Operation and maintenance training**	The supplier will have to carry out successful installation at our laboratory premises (where ever the system has to be installed) and provide on — site comprehensive training for scientific personnel operating the system and support services till customer satisfaction with the system.		

15. BOD Incubator

S.No.	Specifications	Requirement	Please Specify whetherthe quoted model/items meets the specification (Yes/No)	Specify Make and Model

1.	**Application**	For use in microbiological laboratories to measure biochemical oxygen demand (BOD). The incubators are used to sustain and control the humidity and temperature essential to perform many types of experiments in, microbiology and biology labs.		
2.	**Double walled modular structure with 3" thick PUF insulation**	i. Outer wall: Powder coated steelsheet with inner seamless round corner ii. Inner wall: Stainless steel SS-304 with ribs for adjusting removable perforated shelves at the height of 45mm. The nuts, screws and hinges of the inner chamber shall be of Stainless Steel. (*SS GradeX07Cr18Ni9 of IS 6911: 1992 or equivalent) iii. Perforated Stainless Steel- Partition tray (6nos.)		
3.	**Doors**	Double door type • Inner Door: Full view inner acrylic door with aluminum channel boundary, closes on a resilient gasket and permits view of thespecimens (inside the Incubator), without disturbing the thermal conditions inside the chamber. • Interior illumination • Outer Door: Powder coated steel sheet with resin baked finish		
4.	**Capacity**	• 350-400Litres		
5.	**Temperature Range**	• 5°C to 60°C with digital controller, • Temperature increments 0.1°C		
6.	**Temperature Control Accuracy**	• ± 0.3 °C		
7.	**Distribution Accuracy/ uniformity**	• ± 1 °C or better (at 37°C).		
8.	**Temperature display**	• Microprocessor based Digital display of temperature and control along with calibration certificate by ISO17025 accredited agency. • Temperature recorder for inner chamber with maintenance free battery backup and auto charging of battery		
9.	**Air circulation**	• With two completely in built motors along with fan to keep the temperature uniform throughout the chamber		
10.	**Heat up time & Cool Down time**	• 30 min. up to 60 ° C without load. • 40 min. up to + 5 ° C without load		
11.	**Timer**	• 0 to 24 hrs X 7 days cyclic ON /OFFtimer for illuminating port		

12.	**Safety Alarms**	Provision for audio-visual alarm toindicate • Door opening after 2min. • Self -diagnosis function includingover heat • Prevention and over current Protection		
13.	**Computer Interface**	RS 485 / RS232 interface for multiple &single communication port		
14.	**Voltage stabilizer**	Automatic Stabilizer, 4 KVA with TDR(3minutes) electronic type		
15.	**Documents Certificates Performance and safety standards (specific tothe device type);Local and/or international**	• Should be FDA/CE/BIS approved product. • Manufacturer/ Supplier should have ISO 13485 certification under ISO 9001for quality standards. • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent BIS Standard)/Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety		
16.	**Supplier/ Manufacturer**	• Must be ISO certified for quality		
17.	**Service contract clauses, including prices**	• List of all spares and accessories(including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached;		
18.	**Operating manuals, service manuals, other manuals**	Should provide 2 sets (hardcopy and soft- copy) of: - • User, technical and maintenance manuals to be supplied in English language along with machine diagrams; • List of equipment and procedures required for local calibration and routine maintenance; • Service and operation manuals(original and copy) to be provided; • Advanced maintenance tasksdocumentation; • Certificate of calibration and inspection • Complete with IQ, OQ, PQ, Documents, Operations andMaintenance manuals		
19.	**Warranty**	• Warranted for 02 years after satisfactory installation and working excluding consumable parts and accessories.		

20.	**Operation maintenance& training**	The supplier will have to carry out successful installation at our laboratory premises (where ever the system has to be installed) and provide on — site comprehensive training for scientific personnel operating the system and support services till customer satisfaction with the system.		

16. Micro Filtration Unit

S. No.	Specifications	Requirement	Please Specify whether the quoted model/items meet the specification (Yes/No)	Specify Make and Model
1.	Application	Membrane filtration assembly for microbial testing in drinking water (for total coliforms, E. coli etc.) and other beverage /filterable samples.		
2.	Manifold 3 place (SS)	Universal manifold for Microbiological applications, compatible to Reusable and disposable funnels, each part autoclavable. For microbiology: Autoclavable funnels(100mL and 250 ml) • MOC: SS 316, all parts autoclavable • Dimensions (W*L*H) in mm: 168 x 433x 117 • Different filtration heads fit to both reusable and disposable filtration devices • Easy to prevent biofilms • easy access to all inner parts forefficient cleaning • each component can be removed byhand and autoclaved • Quick-fit connections for the vacuumtubing • Low height for ease of use in laminarflow hoods • Funnels 100mL -250mL size, MOC - Polypropylene, assuring leak-free operation and uniform microorganism recoveries as well as an easy transfer of the membrane with forceps and prevents accidentally touching the filtration area		
3.	Filter Forceps	• Beveled, unserrated tips to protect delicate membrane surfaces • May be sterilized by autoclaving or flame-sterilization plastic support, MOC – SS.		

4.	Vacuum Pump	Vacuum Pump - Compact & modular, Maintenance-free technology, must directly connect to the filtration assembly, Compatible to be placed in LAF/Biosafety cabinet. • Flow rate :3.8 to 4.0 L/min • Dimensions (W*L*H) in cm: 19.6 * 16.8 * 22.2 • Materials: Powder coated die cast aluminum body and pump head; Teflon, covered neoprene diaphragm; PTFE-coated internal pump surfaces; high-grade, stainless steel leaf valves • Complies with ISO Standard 8199 guidelines for microbiological analysis (Maximum vacuum delivered does not exceed 700mBar) • Noise level less than 60dB. • Vaccum pressure Maximum 700 mbar as per ISO 8199		
5.	Membrane Filters and Accessories	1. Stainless steel funnel 250 mL (2no) (47 mm dia), support frit and base, Stainless steel funnel cover – 4 sets 2. Rubber vacuum tubing 8 mm – 2 mtrs 3. stainless steel forceps – 8 nos 4. Sterile Nitrocellulose Gridded Membrane Filters (Pore size: 0.45µm, 47mm diameter) –100 x 4Packs		

17. Digital pH meter

S. No.	Specifications	Requirement	Please Specify whether the quoted model/items meets the specification (Yes/No)	Specify Make and Model
1.	**Application**	For research with a comprehensive range offeatures and functions, making it suitable for general laboratory, QC and GLP based applications.		
2.	**Unit**	**Consisting of** Tri-combination pH/ATC electrode with an electrode holder/arm with smooth movement and protection cover		
3.	Working pH Range	0 – 14 pH		
4.	pH	± 0.01 pH		

	resolution			
5.	Mv	• Range 0 - ±1999 • Accuracy±1mV • Resolution 1mV		
6.	Temperature Compensation	0 to 100 ° C with ATC		
7.	Temperatur e	Range -10 to +105°C Resolution 0.1°CAccuracy ±0.5°C ATC range 0 to 100°		
8.	Calibration Points	• Should have 3 stage calibration withautobuffer recognition • NIST traceable buffer set 500 ml each(pH 4.0, 7.0 &9.0).		
9.	Alarm	• Calibration reminder interval (1 to999hrs)		
10.	Temperature Compensation	• Automatic		
11.	Display	• Backlit blue LCD with operation icon • digital display with0.001 pH unit readability		
12.	Accessories	• Extra Electrode • NIST Standard buffer solution (pH 4.0,7.0, 10.01 x 500ml for each bottle) • standard electrode holder • Ac /DC Adaptor.		
13.	Data storage& Output	Data storage facility and record maximumand minimum value. • RS.232C output and supply Data connector cable.		
14.	Documents	• Manufacturer / Supplier should have		
	Certificates Performance and safety standards (specific to thedevice type);Local and/or international	ISO 13485 certification under ISO 9001for quality standards. • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent BIS Standard)/ Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety		
15.	Supplier/ Manufacturer	• Must be ISO certified for quality		
16.	Service contract clauses, including prices	• List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached;		

17.	Operating manuals, service manuals, other manuals	Should provide 2 sets (hardcopy and soft-copy) of:- • User, technical and maintenance manuals to be supplied in English language along with machine diagrams; • List of equipment and procedures required for local calibration and routine maintenance; • Service and operation manuals (original and copy) to be provided; • Certificate of calibration and inspection • Complete with IQ, OQ, PQ, Documents, Operations andMaintenance manuals		
18.	**Warranty**	• Warranted for 05 years after satisfactory installation and working excluding consumable parts and accessories.		

18. Fumigator

S. No.	Specifications	Requirement	Please Specify whetherthe quoted model/items meets the specification	Specify Make and Model
			(Yes/No)	
1.	**Capacity**	• 5 liters with easy cleaning facility		
2.	**Material**	• Tank, Flow control and Nozzle assembly(non-clogging vortex type) should be of SS316 grade, easy to clean, detachable and non-corrosive for chemical		
3.	**Particle size**	• It should produce aerosols with particlesize of less than 5microns • The blower head should be rust proof inert to Formaldehyde, KMnO4, H2O2 and deliver aerosols uniformly.		
4.	**Unit**	• It should be compatible with all disinfectant solutions usualconcentration. • It should be compatible with maximum pH range (both acid and alkali). • The equipment should be of good quality and confirm tonational/international standards.		

5.	**Power supply**	• The machine should operate on 220 +-10 volts, 50 Hz, single phase, A.C • Provided with Cable should be at least5 meters in length, ISI marked.		
6.	**Operation**	• The discharge rate should not be less than 1Liter/25minutes. • The tank capacity, discharge rate and timer on the machine should be so that the disinfectant should be able to disinfect 4000-5000 cubic feet in one cycle of 2 hours(max).		
7.	**Operation and training component**	• The supplier will have to carry out successful demonstration at the laboratory premises (wherever the system has to be installed) and provide on — site comprehensive training for a minimum of two scientific personnel operating the system till customer satisfaction		
8.	**Warranty**	• Warranted for 05 years after satisfactory working excluding consumable parts and accessories.		
9.	Service contract clauses, including prices	• List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should beattached;		
10.	Operating manuals, service manuals, other manuals	Should provide 2 sets (hardcopy and soft-copy) of:- • User, technical and maintenance manuals to be supplied in English language along with machine diagrams; • Service and operation manuals (original and copy) to be provided; • Advanced maintenance tasksdocumentation;		

19. UV Viewing Cabinet

S. No.	**Specifications**	**Requirement**	**Please Specify whetherthe quoted model/items meets the specification (Yes/No)**	**Specify Make and Model**
1.	**Application**	Eyes are protected by the UV filter in the viewing window and used for inspecting thin-layer chromatograms or other objects under UV light in absence of ambient light**.**		

2.	**Unit**	• User-safe, self-contained chamber with Convenient handling • Clear **viewing** window (open/close via hinged door) through button operation for each of two UV tubes • Homogeneous illumination ofchamber		
3.	**Viewport**	• Soft rubber viewport and contrastcontrol filter that absorbs UVenergy to protect the eyes		
4.	**UV tubes**	Two UV tubes for illumination each8W • **Long-wave UV light 366nm** • **Short-wave UV light254nm**)		
5.	**Safety timer**	User safety through tilt sensor and timer (automatic switch- off after 10min)		
6.	**Operation**	• The supplier will have to carry out successful demonstration at the laboratory premises (where ever the system has to be installed) and provide on — site comprehensive training for a minimum of two scientific personnel operating the system till customer satisfaction		
7.	Certificates Performance andsafety standards (specific to thedevice type); Local and/or international	• Should be FDA/CE/BIS approvedproduct. • Manufacturer/ Supplier should have ISO 13485 certification under ISO 9001for quality standards. • Electrical safety conforms to the standards for electrical safety IEC 60601-General Requirements (or equivalent BIS Standard)/Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety		
8.	Supplier/ Manufacturer	• Must be ISO certified for quality		
9.	Service Support Contact details (Hierarchy Wise; including a toll free/landline number)	• Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/ad-hoc) to be declared by the manufacturer;		

10.	Recommendations or warnings	• Any warning signs would beadequately displayed		
11.	**Warranty**	• Warranted for 02 years after satisfactory working excluding consumable parts and accessories.		
12.	Service contract clauses, including prices	• List of all spares and accessories (including minor) with part numbers and price, required for maintenanceand repairs in future after guarantee/warranty period should be attached;		
13.	Operating manuals, service manuals, c	Should provide 2 sets (hardcopy and soft-copy) of:- • User, technical and maintenance manuals to be supplied in English language along with machine diagrams; • Service and operation manuals (original and copy) to be provided; • Advanced maintenance tasksdocumentation;		

20. Anaerobic Jar Filling System with 02 Nos Anaerobic Jar

S.No.	**Specifications**	**Requirement**	Please Specify whether the quoted model/items meets the specification **(Yes/No)**	Specify Make and Model
1.		The Anaerobic Jar Filling System is developed so to achieve an aerobic atmospheric condition inside the Jar in less than 1minute. Create atmosphere suitable for the culture of anaerobic as well as Microaerophilic bacteria. To achieve quick Anaerobic / Microaerophilic conditions, used unique vacuum technology along with purging technology. To be supplied with two(02) Nos of Anaerobic Jar. No additional chemicals are needed to achieve an anaerobic / microaerophilic condition. Touch screen Display protected with security password. Touch screen display allows to control modified purging and vacuum time by end user. User friendly, through programmable touch screen display, automatically managed draining and filling of gases. Simple assembly, easy to connect from Jar to System &Disconnect (Vice Versa). Alternative gases like		

		Nitrogen or gas likecombination of CO_2 , N_2 or Co_2, N_2 with **5 % H_2 can also be connect.**		
2.	**Dimensions (W /D /H)**	200 mm X 400 mm X 350 mm		
3.	**Power Supply**	230 V		
4.	**Gas Supplies**	N_2 and ANO2 (CO_2:H_2:N_2)(10:5:85)		
5.	**Pressure**	150 kg / cm^2		
6.	**Touch Screen Display**	HMI Type L 90 mm x D 50 mm		
7.	**Salient Features**	• Quick & Convenient Solution • Anaerobic Condition achievedwithin 1Minute • Touch Screen LCD Display • User Friendly • Simple Assembly withAlternative Users Option		
8.	**Warranty**	Warranted for 02 years after satisfactory installation and working excluding consumable parts and accessories.		
9.	**Service contract clauses, including prices**	List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached;		
10.	**Operating manuals, service manuals, other manuals**	Should provide 2 sets (hardcopy andsoft-copy) of: - • User, technical and maintenance manuals to be supplied in English language along with machine diagrams; • List of equipment and procedures required for local calibration and routine maintenance; • Service and operation manuals (original and copy) to be provided; • Advanced maintenance tasks documentation; • Certificate of calibration and inspection		

21. Hot Air Oven

S.No.	Specifications	Requirement	Please Specify whether the quoted model/items meets the specification (Yes/No)	Specify Make and Model
1.	**Application**	For drying glassware and also for conditioning of heat sensitive media and to provide an optimal, homogeneous, temperature uniformity and stability to ensure drying iscomplete		
2.	**Material of construction**	• Should have double walled construction, with high quality insulated steel. Inner walls of 304 qualities SS, Outer walls of Epoxy Powder coated GI sheets. Seamless round corner • Facility for adjustable shelves, 10 removable shelves to beprovided. • With internal lighting facility, Insulated door fitted with heavy hinges, mechanical door lock. Glass window may be provided to view samples.		
3.	**Capacity**	• Approx. 200liters		
4.	**Tempe rature range**	• Temperature should be microprocessor controlled • It should be Ambient +5°C to 250°C with temperature setting accuracy ±0.5 °C with forced air circulation for temperature uniformity • Separate PT 100 sensor anddisplay for temperature (LED) • Safety alarms with Auto cut offsystem		
5.	**Unit**	• Air ventilators to be provided on both side • The equipment should be provided with microprocessor controlled digital display • Temperature homogeneity between top and bottom shelves should be maintained by forced circulation		
6.	**Calibration**	• Certificate from a ISO17025 accredited lab for 3 differenttemperature points		
7.	**Power supply**	All electrical peripherals required for smooth functioning e.g. voltage stabilizers should be provided.		
8.	**Accessories**	• Should have all the accessories required for the functioning of the equipment.		

9.	**Certificates Performance and safety standards (specific to thedevice type); Local and/or international**	• Should be FDA/CE/BIS approved product. • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent BIS Standard)/ Certified to be compliant with IEC 61010-1, IEC61010-2-40 for safety		
10.	**Supplier/Manufacturer**	• Must be ISO certified for quality		
11.	**Service Support Contact details (Hierarchy Wise; including a toll free/landline number)**	• Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer;		
12.	**Recommendationsor warnings**	• Any warning signs would beadequately displayed		
13.	**Warranty**	• Warranted for 02 years after satisfactory working excludingconsumable parts and accessories.		

14.	**Service contract clauses, including prices**	• List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached;		
15.	**Operating manuals, service manuals, othermanuals**	Should provide 2 sets (hardcopy and soft-copy) of: - • User, technical andmaintenance manuals to be supplied in English languagealong with machine diagrams; • Service and operation manuals (original and copy) to be provided; • Advanced maintenance tasks documentation;		

22. Micropipettes (*6 No's)

S.No.	Specifications	Requirement	Please Specify whether the quoted model/items meets the specification (Yes/No)	Specify Make and Model
1.	**Material**	Fully Autoclavable		
2.	**Capacity /Volume**	20-200 micro liter (Variable) 100-1000micro liter (Variable) 1-10ml (Variable) *2 eachx3=6		
3.	**Feature**	• Single–channel/manual • Volume lock to prevent drifting		
4.	**Accessory**	Tip boxes 20µl to 200 µl (4 no boxes) 100µl to 1ml (4 no boxes)1 ml to 10 ml (4 no boxes) Tips must be compatible to pipettesand tip boxes 20µl to 200 µl (2 x 1000) 100µl to 1ml (2 x 1000) 1 ml to 10 ml (2 x 1000) Pipette Stand for 3-4 pipetes 4 No.s		
5.	**Calibration**	Certificate from ISO17025 accredited lab for 3 points		

6.	**Warranty**	02 years		

23. Carbon dioxide Incubator

S.No.	Specifications	Requirement	Please Specify whether the quoted model/items meets the specification (Yes/No)	Specify Make and Model
1.	**Capacity**	45 litres or above		
2.	**Display**	LCD/LED		
3.	**Chamber Material**	Single mold 304 grade joint lessstainless steel		
4.	**Processor**	microprocessor		
5.	**Heating type**	Air/Direct Heat		
6.	**No. of shelves**	2-3 minimum		
7.	**Temp. control range**	$0 - 50\ ^{O}C$		
8.	**Ambient temp.range**	5 ^{O}C above ambient to 50 ^{O}C		
9.	**Temp.control accuracy**	± 0.1		
10.	**Temp. uniformity**	± 0.3		
11.	**CO2 sensor**	IR sensor		
12.	**CO2 control range**	0.1-20%		
13.	**CO2 stability**	± 0.2%		
14.	**CO2 recovery time**	0-10 min		
15.	**CO2 tank switch/alarm**	Yes		
16.	**Temp. recovery**	5-15 min		

17.	**Humidity**	95±5%		
18.	**Humidity recovery**	10-20 min		
19.	**Alarm**	Audio & visual		
20.	**Stacking**	Possible		
21.	**Cylinders**	CO2 cylinders (2 nos.); Capacity- 9-10kg; Purity- 98.00%		
22.	**Communic ationport**	Yes		
23.	**Power**	AC 230V/6A, 50Hz		
24.	**Power consu mption**	500-600W (max.); 50-100W at 37oC		
25.	**Disinfection**	Automatic system will be preferred		
26.	**Calibration**	Certificate from NABL accredited labfor 3 points		
27.	**Warranty**	02 years with user manual		

24. Frost free Two Door (side by side) Refrigerator

S.No.	Specifications		Please Specify whether the quoted model/items meets the specification (Yes/No)	Specify Make and Model
	Material Stainless steel			
1.	Capacity	1. 500 ltrs -01(approx) 2. 300 ltrs – 01(approx)		
2.	Adjustable Shelves	Tempered glass shelves 05 No.		
3.	Temperature Range	Digital display and temperaturecontrols Refrigerator +2 to +8 ^{O}C		
4.	Audio alarm	Alarm is door is ajar for long		
5.	Inner body	Rust Free Material		
6.	Refrigerant	CFC / HCFC Free		
7.	Frost Free			
8.	Door Lock & Interior light. The unit to be provided with wheelsfor easy movement			

9.	Same Temperature: Top to Bottom, Fan forced air circulationto ensure stable & uniform preservation environment.		
10.	Microprocessor based Temperature Controller with DigitalDisplay		
11.	In built Voltage Stabilizer High/Low cut with timer delay		
12.	Door Glass Heater for special heated front glass thatenhances visibility and prevents unhygienic condensation		
13.	Warranty: 02 years and Life time on motor		

Note 1: If the needs arise the successful bidder may also be allowed to deliver other approved or equivalent makes and models/ latest specification of the equipment quoted by other qualified bidders in the tender after approval.

PART C: Chemistry Section

1. LIQUID CHROMATOGRAPH TANDEM MASS SPECTROMETER (LC-MS/MS) ALONG WITH ALL ACCESSORIES AND SAMPLE PREPARATION- 1 QTY				
S. No.	**Main Heads/ Components**	**Prescribed Specification**	**Please specify whether the quoted model meets the specification (Yes/No)**	**Specification of the Quoted Model**
1.	LC-MS/MS	A compact High-resolution LC-MS/MS equipment for qualitative and quantitative estimation of food contaminants (Pesticides, Mycotoxins, antibiotics etc.) residues analysis with user friendly software to meet the global food regulations like EU/USFDA/Japan/FSSAI, etc		
1.1.	Mass Stability	0.1 Da over 24 hours (please provide graphical data)		
1.2.	Dynamic range	Should be 6 orders of magnitude or better		

1.3.	Mass analyzer	Quadrupole Analyzer: • The instrument should be configured with a quadrupole mass filter for the efficient transmission of ions in MS mode and selection of precursor ions for MS-MS analysis • The Quadrupole mass range 20 - 1200 m/z or better • The Analyzer should have more than one aspect for the efficient ion separation with maximum resolution.		
1.4.	Sensitivity	I Lower detection and highest sensitivity • ESI positive Ion Sensitivity: The signal/noise ratio for I pg of reserpine should be >12,00,000: I or better, in MRM mode of reserpine at the transition m/z 609 -mlzI 95 Or The instrument detection limit (IDL) should be less than 2.5 fg for Reserpine in ESI Positive mode. • **The sensitivity specifications should be available on the specification sheet and no supporting document/proof/lab data will be accepted.** • ESl negative Ion Sensitivity: The signal/noise ratio for 1pg of chloramphenicol should be >10,00,000: I or better, in MRM mode of chloramphenicol at the transition m/z 32l -m/zI 52 Or The instrument detection limit (IDL) should be less than 2.5 fg for chloramphenicol in ESI negative mode.		
	Performance	• The instrument must be capable of analyzing Anionic polar pesticides with direct injection (without derivatization) i.e. Glyphosate, Glufosinate, AMPA, Ethephon, Fosetyl Al, Phosphonic acids, chlorate & Perchlorate in single run at default MRLs depending on the various food matrices • Analysis of banned Vet drug residues and regulated antibiotics as per the RPA (Reference Point of Action) or FSSAI regulation, RC, MRL in various food animal origin.		
1.5.	Scan speed	I • Should have the scan speed of 12,000 amu per sec or better		

1.6.	Ionization	I • Electrospray with Concentric Gas Flow for Nebulization to cover flow rates up to 2ml/min. • Multimode Ionization: ESI / APCI combined source: A combined EST/APCI source must be provided as standard with the instrument. ESJ and APCI ionization must be achieved using a single probe. It should able to perform both EST and APCI		
1.7.	Source Interface	I • Orthogonal off-axisspray (Electrospray) or any other equally efficient technology capable of avoiding interference from solvents and other extraneous matter. • lnterface should maintain cleanliness of ion optics and capable of handling large batches of complex samples. • Capable of handling large batches of complex sample matrix like Animal feeds, Fish and fishery products, poultry and poultry products, Honey, Milk and Milk products, Agriculture products (Frnits & Vegetables) etc. over a long period of time without performance degradation		
		• Cleaning of source should be done without venting the system and facility to vacuum interlock. • Interface capable of ambient temperature operation and without complex apertures to maintain structural integrity of thermally labile and fragile molecules.		
1.8.	I Integrated Fluidic Device(to minimize space and tubing)	• An infusion device must be integral to the instrument or equivalent and must be controllable from the instrument software. At least 2 user-changeable sample vials should be built into the system to allow tuning and calibration solutions to be infused into the probe via the switching valve..		
1.9.	I Polarity switching time	• +ve / -ve polarity switching time between alternate MRM scans should be 20 msec or better with suppo1ting documents		
1.10.	I Vacuum System	• Robust high efficiency vacuum system with minimum maintenance and utility with low noise level. • Vacuum read backs must be digitally		

		monitored and controlled through software to ensure fail-safe operation in the event of power failure. • All accessories required for the proper functioning of the vacuum system should be supplied. • Fore line pump: Oil free Scroll type pump with arrangements of AUTO- ON after Power auto age. • High vacuum pump must be Turbomolecular pump: 250 L/Sec or better		
1.11.	I Gas Control	• All gases must be controlled by the software.		
1.15.	Operating modes	• Mass spectrometer should have the following scan options: • Full scan • Selected Jon monitoring/ recording (SIM/SIR) • Product ion scan • Precursor ion scan • Neutral loss scan • Multiple Reaction Monitoring (MRM) • MS and MS/MS in a single injection with matrix background		
		monitoring or equivalent. (Proof document /application note to be enclosed along with technical tender document with onsite verification) • Simultaneous full scan and MRM or better (_Optional) _		
1.16. I	Detector	• A high sensItIvIty, high throughput detector with zero dead time, low noise and high accuracy at low level detections. • An off-axis dynolite photomultiplier/Electron Multiplier detector • Detector must operate in both positive and negative ion modes. • Capable of switching polarity rapidly. • Should have a better long life. (Life time shall be furnished and the better one will		

		be given preference during technical evaluation).		
1.17	Nitrogen Generator	• Should be supplied with the system along with the trouble free inbuilt compressor and appropriate capacity reservoir which should be sufficient enough to deliver the gases (purity > 99.999%) required to run the system • Should be complete with all necessary accessories with 2 Years comprehensive warranty with at least one Preventive maintenance along with PM kit each year and 3 years CMC after the warranty period including all spares, accessories and consumables , at least one Preventive maintenance along with PM kit each year and unlimited breakdown visits		
1.18	I Vacuum Manifold with compatible SPE Cartridges	• Minimum 10 cartridges extraction at one time • Minimum I000 cartridges for different analytes i.e pesticide residues, antibiotic residues etc		
2.	High Performance Liquid Chromatograph y System	• List of column with Specification: a) C-I8, 2.1x I 00 mmx 1.7 tm with suitable Guard column b) C-18, 2.1xl50 mmx 1.7 µm with suitable Guard column c) C-18, 4.6 x250 mmx 5 1111 with suitable Guard column		

		d) C-8, 4.6 x250 mmx 5 µm with suitable Guard column e) Phenyl-Hexyl 2.1mm xl00 x, 3µm or equivalent HILIC column with Guard column • The complete system and the MS should be controlled by the single software • PUMP: Binary pump pressure handling capability. Operating flow range should be 0.010-2.0m I/min or better with 1µl increments • Autosampler: with I to IO ul/min injection, minimum of I 00 samples capacity. Capability to handle pressure range of 15000 psi or better. • Column Oven: 30°C to 80°C, capability to accommodate a minimum of I or more columns of 2: 15 cm. Temperature Stability: ±0.1°CTemp. Accuracy: ±0.5°C		
3.	Spares and accessories	• LC-MS/MS start up kit should be supplied as standard. • All required traceable standards for Mass calibration and tuning, HPLC calibration should be provided • 5µ1, I 0µ.l, 20 tl, 50 d, I 00µ1 loops, Vacuum pump oil, etc. and any other material required to make the instrument functional should be provided. • Standard Tool kit should be provided for Instrument maintenance • Reputed highly branded solvent filtration unit with pump and required accessories 02 no's		
4.	System Controller and Operating system	• Software must be Multitasking type. It must acquire and process the data simultaneously • Application manager must be compatible with data of full scan, SIM/SIR or MRM • Data Acquisition, Peak Integration, Calibration, Quantification and QC		

		calculations must be fully automated.		
		• The Quantification method editor must be viewable in page view or spreadsheet. • Application manager must allow to monitor the molecular ion and up to 04 (four) • Confirmatory ions or better. • Must be capable of performing the following functions and should be upgradable: • Workstation must be able to control the MS, acquire, store, process and reproduce the data by the same computer. • Workstation must be able to control LC, Detector, and auto sampler. • It must be able to regulate the gas pressure and flow during the data acquisition and append to the relevant data file. • Software must have automated calibration and Quantitative optimization. • Automated MS to MS/MS switching during a single run with user selectable criteria • Perform alternating positive/negative scans in one rnn • Automated Quantitation and reporting of acquired samples. • Data may be processed as it is being acquired		
5.	Calibration Standards	• One sets each NIST or other traceable standards for all the Pesticides, Mycotoxins, antibiotics as per FSSAI requirement with a minimum expiry period of two years.		
6.	PC with Printer	• Minimum Intel core i5/i7 processor, 2.0 Ghz or more, 19"or more LCD/fFT Monitor, 500 GB HDD, DVD Read/Write, 4 GB RAM,4 USB Port or higher configuration for use with the abovestem to be		

		provided.		
		• Reputed Branded automatic back-to-back colour Laser jet printer should be provided		
7.	Power Supply	A centralized UPS system of suitable capacity for all supplied equipment should be provided for minimum 60 min back up complete with wiring & earth requirement.		
8.	Additional items	• Bidders should quote a startup package for I 00 samples. Jn addition, the bidders should give a list of recommended consumables along with their source and budgetary prices. • Operation kit comprising all required items for startup/regular operation of instrument. • Firm should also quote all essential pre-installation requirements and utility requirement for LC-MS/MS. • Operation and maintenance manual for each unit in both hard copy and soft copy. • Service manual with set of required tools for each system/unit. • The system should have Server connectivity and should be capable of 21 CFR Part 11 and food safety compliance. The necessary validations will have to be carried out by the equipment suppliers. • Complete methods library with MRMs of Mycotoxins, Veterinary drugs, Pesticides, antibiotics with instrument method detail and SOPs, related software's and user manuals to be provided.		
9.	Installation & Training Component	• The supplier will have to carry out successful installation at our laboratory premises (where ever the system has to be installed) and provide on - site comprehensive training for scientific personnel operating the system and support services till customer satisfaction with the system and a training at the supplier's lab premises is also required.		

1o.	**IQ/OQ/PQ**	• IQ/OQ/PQ of the system is required		
11.	**Warranty**	• Standard Warranty of 5 Years starting from elate of satisfactory and faultless functioning of the equipment for 60 clays at the respective laboratory premises. • Comprehensive Maintenance Contract Service for 60 months after expiry of standard Guarantee/Warranty should be quoted separately. • Annual calibration of the equipment shall be a part of the CMC. It shall also be mandatory to perform calibration after every major repair/breakdown. • The vendor should have available for ten years guaranteed parts and CMC service • The supplier or his authorized agent should have after sales and service centre near each of our laboratory location where the equipment is to be supplied. • Current user's / performance list with contact details (Customer name, phone email id etc) and elate of installation to be provided (Minimum 5 installations of the model quoted) • Number and details of the service engineers has to be provided • Onsite performance evaluation of the equipment will be carried out for those who qualify in the technical bid. • 5 years warranty and 5 years CRMs and is in the scope of bidder only. CRMs price break up also shall provide for future reference.		
12.	**Preinstallation requirements**	• Provide all pre installation requirements		

2. INDUCTIVELY COUPLED PLASMA MASS SPECTROMETER (ICP-MS) ALONG WITH ALL ACCESSORIES AND SAMPLE PREPARATION

Sl. No.	Main Heads/ Components	Prescribed Specification	Please specify whether the quoted model meets the specification (Yes/No)	Specification of the Quoted Model
1.	**System Application**	The system should have • Computer controlled fully automatic ICP- MS system • Simultaneous multi-elemental analysis in ppm, ppb and ppt levels with required sensitivity and stability of diverse range of food and water samples • The system should be a space saving, compact model that can fit into allocated lab space with all the sub- systems and accessories. • Corrosion-resistant exteriors should be provided • Model number of the equipment proposed to be supplied to be clearly mentioned		
2.	**Sample Introduction system**	The system should have • **Nebulizer:** Concentric Micro mist Nebulizer with low sample flow rate • **Spray Chamber:** Peltier cooled spray chamber • **Peristaltic pump:** Low pulsation high precision peristaltic pump with minimum of three separate channels which can be c ontrolled !1 1ro11g 11Jh (! software.		
3.	**Plasma**	The system should have • **RF Generator:**		

		RF Power range: 500W to 1600 W. Radio Frequency Generator (Solid State): 27 or 40 MHz Impedance Matching: Auto-tuning to get maximum coupling efficiency. • **Torch:** Easy mountable single piece quartz torch with shield torch (i) Torch movement should allow for complete computer-control and auto tunable in x-y-z directions with independent movements in the three directions. (ii) Provision for Auto-alignment of the torch after routine maintenance with a reproducibility better than 0.1 mm in x-y-z directions • **Plasma Gas Control:** Should have at least 3 Mass Flow Controllers (AMFC) or equivalent PC Controller for control plasma, auxiliary makeup, carrier gases. Gases used should be controlled with mass flow controller and fully computer controlled. • Argon gas dilutor or equivalent technology must be quoted along with the main instrument.		
4.	**Ion Extraction Interface**	The system should have • Standard sample and skimmer cones with suitable orifice diameters to suit all application and to prevent clogging and minimize signal drift. It should be easily mountable and dismountable. • Scope of supply of standard (Nickel) and optional (Platinum) cones should be clearly specified. (for any alternate material, bidder would need to prove sensitivity) • Lens/ extraction cones or equivalent should be easy to maintain.		

S.	**Ion Focusing System**	The system should have • Ion focusing system with efficient mechanism for removing all neutrals and photons from the Ion path. • Cell offering three modes of operation: Standard Mode, Collision Cell Mode and Reaction Cell		
		• Switching of reaction and collision gases will be through software and automated. Unit will have the flexibility of applying both (collision, and reaction) gases using single method for removal of interferences. Mass Cut off facility or equivalent technology should be there to remove unwanted polyatomic interferences formed due to free atoms. • A reaction cell should be provided for poly atomic interference removal with Helium mode and Hydrogen mode. Separate AMFCs for Reaction cell gases. • Vendor should attach application notes for Arsenic analysis as per FSSR where 02 or any other suitable gas is used to remove interference for ArCI which demonstrates mass shift mode. • Reaction cell assembly and octopole/ hexapole assembly (if requires cleaning any time in lifetime) should be quoted.		
6.	**Quadrupole Assembly**	The system should have • Quadrupole Mass Analyzer: A quadrupole mass analyzer to provide effective ion transmission, superior resolution and abundance sensitivity. • Mass range: 5-260 amu or above • RF Frequency Fully Digital RF generator with frequency 2-3 MHz • Abundance sensitivity: Low Mass Side: 5 X I0^{-1} High Mass side: I X I0^{-1} • Scan Speed: Greater than 3000 amu/s		

		• Mass stability: < ± 0.05 amu over 8 hours of continuous operation. • Resolution: Variable from 0.5 u to 1.0 u or better, user definable		
7.	**Ion Detector Assembly**	The system should have • Solid State dual stage dynode discrete over 9 orders of IO orders or more magnitude of linear dynamic range. • Should be unique log amplifier circuit, features a high speed analog mode for transient signals and a true nine orders dynamic range. • Minimum dwell time/ integration time of 100 µs (in both pulse count and analog modes.		
		• Dual-stage detector assembly should come as a standard with the system.		
8.	**Vacuum System**	The system should have • Efficient Vacuum system with turbo molecular pump and single external rotary pump for fast pump down and simple maintenance. • In the event of vacuum failure, the entire vacuum system is to be automatically back-filled by ine1t gas to preserve the cleanliness of !he system or an alternate s1_stem.		
9.	**Performance Specifications**	Guaranteed sensitivity specifications will be considered (To be demonstrated during Demo): Typical sensitivity values will not be considered • Should be able to analyze Sn, Ni, Cu, Zn, Ba, Sb, Ni, B, Ag, Mg, Ca, Na, As, Cd, Cr, Hg, Pb, Se, Fe (but not limited to these elements) at a concentration of 0.05ppb with RSD of <5% at standard conditions. • Oxide ratio (%) CeO/Ce< 2 % • Double charged ratio < 3 % • Isotope-ratio Precision: I %RSD		

10.I	**Water Chiller**	The system should have a suitable re-circulating chiller changer of internationally reputed company for plasma component cooling.		
I t.i	**Auto Sampler/ Diluter**	The system should have • Highly effective auto sampler/ diluter compatible with operation along with ICP- MS without user intervention. • Auto sampler with minimum 200 vials holding capacity with 500 nos. of 15 ml capacity tubes (as consumable). • Programmable complete with inert PTFE coated probe with PTFE inner tubing. • Spare extension tube complete with 20 ml syringe for progranuned auto dilution • All accessories, racks, bottles, tubing assembly, waste container, dust cover etc.		
12. I	**System Controller and Operating System**	The system should have • Software control for automatic data acquisition and processing. • mass spectrometer tuning and calibration auto and manual		
		• Data Validation (IQ/OQ/PQ for Software) • Self-diagnostics • Multi element analysis capability Isotope ratio and dilution • Cool Plasma or other facility to eliminate polyatomic interferences. • Remote diagnostics • Software should control plasma, MS and other accessories like auto sampler • The system software shall suppo1t the following calibration curve fit modes for Quantitative analysis: i. Linear least squares. 1i. Weighted linear least Squares iii. Linear forced-through-zero least squares. 1v. Quantitative analysis including external calibration, additions calibrations, method of standard additions, isotope ratios and isotope dilution's and semi quantitative		

		analysis. v. On-line help with quick steps to reference entire instrument user manual.		
13.	**Computer**	• Minimum Intel core i5/i7 processor, 2.0 Ghz or more, l9"or more LCD/TFT Monitor, 500 GB HOD, DVD Read/Write, 4 GB RAM,4 USB Port or higher configuration for use with the above system to be provided. • Reputed Branded colour Laser jet printer and automatic back to back should be provided		
14.	**Multi vessel Microwave digestion system**	The system should be provided with a suitable microwave digestion system of 20-25 samples processing capacity in one batch along with proper fume hood system. The specification along with the model should be provided at the time of tendering.		
1S.	**Exhaust unit**	Exhaust unit for the ICP-MS has to be supplied along with the System		
16.	**Standards with minimum expiry of two years**	• Specially pure Analytical N1ST traceable single element standard solutions(Minimum pack orl00ml each whichever is lower) for Sn, Ni, Cu, Zn, Ba, Sb, Ni, B, Ag, Mg, Ca, Na, As, Cd, Cr,		
		Hg, Pb, Se, Fe should be supplied • Multi element Calibration NIST traceable standards for ICP-MS - one set		
17.	**Power Supply**	A centralized UPS system of suitable capacity for all supplied equipment should be provided for minimum 60 min back up complete with wiring & earth requirement.		
18.	**Accessories**	The following Items, but not limited to, has to be supplied along with the equipment • Peristaltic pump tubing-sample intake - 100 No's • Peristaltic pump tubing-Drain - I 00 No's • Tubing - Auto Sampler to Peristaltic Pump - 25 No's • Micromistnebulizer-5No's • Plasma Torch - *5* No's • Ni Sampling Cone - 4 No's and Pt		

		Sampling Cone- 2 No's • Ni Skimmer Cone - 4 No's and Pt Skimmer Cone-2 No's • Hyper skimmer cones/extraction system for HF digested sample. • Vacuum Pump oils - *5* litres • Argon Gas Cylinders-6 • Gas cylinder for Collision cell gases - Helium-I • Gas cylinder for Reaction eelI gases - Oxygen, Hydrogen & Ammonia (>99.99 % mixed or pure as per system requirement), whichever is applicable for individual system for elimination of interference species along with 3 stage Gas pressure regulators for each cylinder. • Gas purification panel for Argon, Oxygen, Helium & Hydrogen with appropriate plumbing. • Optional: Any other accessory as felt required for the proper functioning of the eqll_iQinent_.		
19.1	**Additional items**	• Bidders should quote a start tup package for I00 samples. In addition, the bidders		

		should give a list of recommended consumables along with their source and budgetary prices. • Operation kit comprising all required items pump tubings, transfer tubings, work coils etc. for startup/regular operation of instrument. • Firm should also quote all essential pre-installation requirements and utility requirement for ICP-MS. • Give the Detection limits (DL) chart for Sn, Ni, Cu, Zn, Ba, Sb, Ni, B, Ag, Mg, Ca, Na, As, Cd, Cr, Hg, Pb, Se, Fe (but not limited to these elements. Provide for as many elements as vendor can) and give the conditions at which the DLs are measured. • Operation and maintenance manual for each unit in both hard copy and soft copy. • Service manual with set of required tools for each system/unit. • The system should have Server connectivity and should be capable of 21 CFR Part 11 and food safety compliance. The necessary validations will have to be called out by the equipment suppliers. • Methods library for all food matrixes, related software's and user manuals to be provided.		
20.	**Installation** & **Training Component**	• The supplier will have to carry out successful installation at our laboratory premises (where ever the system has to be installed) and provide on - site comprehensive training for scientific personnel operating the system and support services till customer satisfaction with the system and a training at the supplier's lab premises is also required.		

21.	**IQ/OQ/PQ**	• IQ/OQ/PQ of the system is required		
22.	**Warranty**	• Standard Warranty of 60 months starting from elate of satisfactory and faultless functioning of the equipment for 60 days at the respective laboratory premises. • Comprehensive Maintenance Contract Service for 60 months after expiry of standard Guarantee/Warranty should be quoted seprately • Annual calibration of the equipment shall be a part of the CMC. It shall also be mandatory to perform calibration after every major repair/breakdown. • The vendor should have available for ten years guaranteed parts and CMC service • The supplier or his authorized agent should have after sales and service center near each of our laboratory location where the equipment is to be supplied. • Current user's / performance list with contact details (Customer name, phone email id etc) and date of installation to be provided (Minimum 5 installations of the model quoted) • Number and details of the service engineers has to be provided • Onsite technical performance evaluation of the quoted model of the equipment will be carried out for those who qualify in the technical bid. • 5 years warranty and 5 years CRMs and is in the scope of bidder only. CRMs price break up also shall provide for future reference.		
23.	**Preinstallation requirements**	• Provide all pre-installation requirements		

3. GAS CHROMATOGRAPH TANDEM MASS SPECTROMETER (GC-MS/MS) ALONG WITH ALL ACCESSORIES AND SAMPLE PREPARATION				
Sl. No.	**Main Heads/ Components**	**Prescribed Specification**	**Please specify whether the quoted model meets the specification (Yes/No)**	**Specification of the Quoted Model**
11.	**GC system**	A compact high sensitive GC-MSMS system suitable for the analysis of Organo-chlorine pesticides, Organo-phosphorous pesticides, Synthetic Pyrethriods, PCBs and YOCs in food products and water at < I ppb level with user friendly software. The system should have a Triple Quadrupole geometry, capable of carrying out MS and MS/MS experiments.		
1.1.	**Column oven**	The system should have All temperature and time functions are controlled by microprocessor-controlled and are shown on the touch- screen display. • Temperature: Operating Range **Ambient +4°C to** 450°C • Heating rate: from 50 to 450 °C within 5 min. • Cooling down rate: from 450 to 50 °C in less than 5 min. • Temperature programming facility. • Ramps : minimum 15 ramps with 16 plateaus or more • Maximum inlet temperature ramp rate : 120 °*CI* minute or better for all voltages • **Should have oven power safety(power off** when door is open)		
1.2.	**Column**	• Dimensions: 30111x 0.250mm x 0.25 1111 • HP-5MS/ DB-I MS or equivalent) (02 no.) • DB-5/ HP-5 or equivalent (01 No) • DB 130I or equivalent _COI No		

1.3.	**Inlet**	The system should have **a. Programmable Temperature Vaporizer (PTV)** • Temperature ramped split/ splitless and large volume injection modes. • Electronic pressure/ flow control. • Pressure setting range O to I OOpsi or more		
1.4.	**Auto Sampler**	The system should have • Internal standard addition • Auto injector / sampler for Liquid injector (minimum I 00 vials) and HS with minimum 60 sample vials capacity • Capable of handling large volume injection with syringe size from 0.5 to 250 µl. • Completely programmable from software.		
1.5.	**Backflush**	The system should have column encl or mid column backflush to remove unwanted components/contaminants/high boilers.		
.	**MS/MS System**	The system should have • **Mass range:** Quclrupole 10 to 1000 amu or better. • **Mass resolution:** minimum 0.7 (width at half height). • **Mass axis stability:** ±0.l amu over 24 hours or more • **Linear Dynamic range:** minimum 6th order of magnitude. • **Scan rate (electronic):** 10000 amu/sec or better • **Ionization modes:** El (Electron ionization) and Cl (Chemical ionization) modes Ion source should have heating capacity of 350°C or more. • CI: must be capable to operate with different reagent gasses & electronic flow control for reagent gasses. • Collision cell gas pressure must be		

		electronically/Software controllable. • Collision energy must be variable.		
		• **Scan Modes:** i. Should be able to do Scan, SIM, MRM/SRM, Parent ion scan, Product ion Scan, and Neutral loss scan-time segment based. 11. Simultaneous Full Scan-SIM or Full Scan/MRM or SRM whenever required. 111. SRM/MRM Speed: minimum of 800 MRM/sec 1v. Minimum MRM dwell time of 0.5 milliseconds or better. • Installation checkout sensitivity must be better than - • Instrument detection limit: 4 fg or less octatluoronaphthalene (OFN) • EI Scan sensitivity : I µI of I pg/µI Octafluoronaphthalene (OFN) should give SIN greater than I 000:I in scan mode I µI injection from m/z 50 to 300 for m/z 272. • ETMRM Sensitivity : I µL of I 00 fg/ tL Octatluoronaphthalene (OFN) should produce the following minimum signal-to-noise for the transition from m/z 272 to m/z 222: 6,000:I or better on 30 mt. column. • **Turbomolecular pump:** Air cooled turbomolecular pumps, Rotary vane fore-1ine pumps supporting the turbo-molecular vacuum pump • Noise reduction cover for fore line pump. • Software controlled auto-tune or manual-tune to enable quick start-up for quantitative analysis.		

		• Independently heated GC/ MS interface. • Extended dynamic range Electron Multiplier or off-axis high-energy detector with configuration to direct the charged ion of interest away from the neutrals with long life and better sensitivity. • The instrument supplier has to demonstrate that the machine is suitable for the analysis of Organo-chlorine pesticides, Organo- phosphorous pesticides, Synthetic Pyrethriods, PCBs and VOCs in Fish, vegetables and water at < I ppb level.		
3.	**Nitrogen evaporator**	The system should be provided with a suitable Nitrogen evaporator system of 20- 25 samples processi_ng capacity in one batch along with proper fume hood system. The specification along with the model should be provided at the		
		time of tendering.		
4.	**System Controller and Operating system**	• Should have capability to run the mass spectrometer in all the modes specified in Scan mode.		
		• Data acquisition, integration, calibration,		
		quantification and QC calculations must be automated		
		• Manual and Auto tune options should be provided.		
		• Automatic MRM/SRM method Development		
		• Library searching facility with Licensed NIST Library (in CD/ROM Format).		
		• Pesticides and endocrine disruptors, PCB's, VOC's, Fatty Acid Methyl Esters, and		
		artificial flavors. MRM Database for minimum 800 GC molecules		
		• 21CFR part 11 & food safety compliance.		
		Quantitative analysis- Qualitative analysis		
		Features		
		• Imports information directly from the acquisition method		
		• Provides a curve-fit assistant to test all fits and statistics on curve quality		

		• Integrates with an automated, parameter-free integrator that uses a novel algorithm, optimized for triple Quadra pole data • For fast method development, this software is used to quickly review the qualitative aspects of the data, such as the optimum precursor to product ion transitions. • Qualitative Analysis program to present large amounts of data for review in one central location. • Extract chromatograms • View and extract peak spectra • Subtract background • Integrate the chromatogram • Find compounds		
5.	**PC with Printer**	• Minimum Intel core i5/i7 processor, 2.0 Ghz or more, l9"or more LCDffFT Monitor, 500 GB HOD, DVD Read/Write, 4 GB RAM,4 USB Port or higher configuration for use with the above system to be provided. • Reputed Branded automatic back to back colour Laser jet printer should be provided		
6.	**Start up Kit**	• Installation kit must be included. • **Required gas cylinders** (with requisite certificate) for Helium and Argon or Equivalent (3 each) should be provided with accessories like Gas regulators and gas purification system etc., • Required Gas regulators and gas purification systems should be provided, installed and commissioned for all the gases used in the instrument including gas tubing, manifold		
7.	**Sample Preparation kits**	**QuEChERS Kits (1000 nos each) for Pesticides etc in following matrices:**		

		• Water • High fat containing food • High Water content food • Highly Pigmented foods(eg chlorophyll, lycopene, carotene etc)		
8.	**Calibration Standards with a minimum expiry period of two years**	Pesticide standards with I year expiry date to be supplied for 7 years o Organo Chloro Pesticides mix in hexane/acetonitrile 2x 1 ml (I 00 µg/mL of each pesticide) o Organo Phosphorous Pesticides in hexane/acetonitrile 2xl ml (100 µg/mL) o Pyrethroids in hexane/acetonitrile 2x I ml (100tg/mL) o Herbicides Glyphosate, Glufosinate 2x 1ml (100 µg/mL)		
9.	**Accessories and Consumables**	• Sample injector: • For liquid injection (5 no. each) • For HS syringe (5 no. each) • Air tight syringe (f o r manual injection) (2 no. each) • Manual syringe for liquid injector (2 no. each) • Auto sampler vials: 500 vials with screw cap.		

		◦ Vials with cap for 1.5 ml capacity (I 00 No.). ◦ Vials with cap for IOand 20 ml capacity (each 50 No.). • Column Ferrules- injector end and interface end (20 No. each). • Septa for injector (100 No.). • Appropriate nuts to fit capillary columns to the injector and MS interface (IO each). • Inlet liner for Splitless, Split (with glass/qua11z wool at optimum position) and PTV (with glass/quartz wool at optimum position) (IO No. each) • O-ring for injector liner (20 No.) • Split vent trap (2 No.) • El Filaments (5 No.) • Cl Filaments (5 No.) • Column cutter (2 No.) • Gas tube cutter. • Oil mist trap for pump (2 No.). • Tool kit. • **Optional:** Any other accessory as felt required for the proper functioning of the equipment.		
10.	**Power Supply**	A centralized UPS system of suitable capacity for all 3 equipment should be provided for minimum 60 min back up complete with wiring & earth requirement.		
11.	**Additional items**	• Consumables for seven years operation of the system for main unit are required to be quoted for analysis in multiples of I 00 samples. • Operation kit comprising all required items for startup/regular operation of instrument. • Firm should also quote all essential pre-installation requirements and utility requirement for GC-MS/MS. • **Operation and maintenance manual for each unit in both hard copy and soft**		

		copy. • **Service manual with set of required tools for each system/unit.** • The system should have Server connectivity and should be capable of 21 CFR Part 11 and food safety compliance. The necessary validations will have to be carried out by the equipment suppliers.		
		• Methods library for all food matrixes, related software's and user manuals to be provided. PLEASE PROVIDE MAINTENANCE CHART FOR ALL OF THE COMPONENTS IN GC-MS/MS SYSTEM.		
12.	**Installation** & **Training Component**	• The supplier will have to carry out successful installation at our laboratory premises (where ever the system has to be installed) and provide on - site comprehensive training for scientific personnel operating the system and support services till customer satisfaction with the system and a training at the supplier's lab premises is also required.		
13.	**IQ/OQ/PQ**	• IQ/OQ/PQ of the system is required		
14.	**Warranty**	• Standard Warranty of 60 months starting from date of satisfactory and faultless functioning of the equipment for 60 days at the respective laboratory premises. • Comprehensive Maintenance Contract Service for 60 months after expiry of standard Guarantee/Warranty should be quoted separately. • Annual calibration of the equipment shall be a pa1i of the CMC. It shall also be mandatory to perform calibration after every major repair/breakdown. • The vendor should have available for ten years guaranteed parts and CMC service • The supplier or his authorized agent should have after sales and service center		

		near each of our laboratory location where the equipment is to be supplied. 5 years warranty and 5 years CRMs and is in the scope of bidder only. CRMs price break up also shall provide for future reference.		
		• Current user's I performance list with contact details (Customer name, phone email id etc) and date of installation to be provided (Minimum 5 installations of the model quoted) • Number and details of the service engineers has to be provided • Onsite performance evaluation of the equipment will be carried out for those who qualify in the technical bid.		
15.	**Pre-installation requirements**	• Provide all pre-installation requirements		

4. HIGH PERFORMANCE LIQUID CHROMATOGRAPH (HPLC) With PHOTODIODE ARRAY (PDA), FLUORESCENCE (FLD) AND REFRACTIVE INDEX DETECTOR(RID)			
Application: High-performance liquid chromatography (HPLC) is used to separate, identify, and quantify each component in a mixture. In food analysis it is used for analysis of food colors, food additive, vitamins, sugars amino acids, triglycerides etc. It is also used to estimate aflatoxin.			
A complete HPLC comprising of a 1) Quaternary solvent system 2) Autosampler, 3) Column Oven, 4) Columns C18 & C8 RP Columns and 5) Detectors (PDA, FLD and RI). The complete system should be controlled by single software. The system should have the capability to operate the column range from 10 µm to sub 2.5 µm particles and any other column chemistry *Note: All units must be from the same manufacturer. Technical bids with compatible modules from another manufacturer will not be evaluated*			
1. Quaternary Gradient System with Online Degasser.			
Pressure operating range	9500 psi or better		
Flow Rate Range:	Programmable 0.01 to 2 ml/ min in 0.01 ml/min increments		
Flow Precision	±0.1% RSD or below		
Flow Rate Accuracy	±1%		
Delay Volume	< 1100 µl		
Eluent Degassing	Online membrane Degasser for all channels		
Gradient Mixer	• Quaternary mixing & gradient capability using suitable proportionate valve) • Plunger Seal Wash Integral/Gradient Profiles which include gradient curves: linear, step, concave, and convex • Composition Precision 0.20% RSD or +/- 0.04 min SD, whichever is greater, based on retention time		
Solvent Setting Range	4 solvents setting range:0-100% with 0.1% step		
Diagnostic Features	Error detection and display, Leak detection & safe leakhandling		
PDA Detector			
Wavelength range	190-750 nm with inbuilt Holmium oxide filter		
Spectral resolution	1.2 nm or better per photodiode with a Total of 5 1 2 / 1024photodiodes, digital and optical (3D modes)		
Bandwidth	<1.2 nm or better		
Linearity range	<5% at 2 AU, 257 nm		

Baseline noise	8.0 X 10^{-5} AU at 254 nm or better		
Drift	<1.0x 10^{-3} AU/h at 254 nm		
Suitable peak purity software, Auto threshold for peak purity			
RI DETECTOR			
Refractive Index Range	1.00 to 1.75 RIU		
Noise Level	± 2.5 x 10^{-9} RIU		
Drift	1 x 10^{-7} RIU/hr		
Cell Volume	Approximately 10 µL		
Temperature Control	Temp. controlled Flow cell unit		
Temperature OperatingRange	5º below 25 ºC to 50ºC.		
Fluorescence Detector			
Light Source	Continuous Xenon lamp		
Excitation Wavelength	Range 200-850 nm		
Emission Wavelength	Range 220-700 nm or better		
Spectral bandwidth	15-20 nm both in the excitation and emission sides		
Wavelength accuracy	should be +/- 3 nm		
Repeatability	should be ± 0.2nm		
Sensitivity (Single mode)	S/N > 1000 (Raman Spectrum of H_2O) as per ASTM Method		
Pressure	limit up to 500 psi		
Column Oven with preheating capability			
Temperature range	+5 ° C to 60° C		
For column length	Must accommodate up to 300 mm length columns		
No of Columns accommodated	2 or more		
Temperature Stability	±0.1 ºC of set temperature		
Cooling system	Peltier based or equivalent technology		
Autosampler			
Injection Mode	Total vol. Inj / Variable Inj method		
Injection Volume Range	0.1-100 µl (Standard)		
Sample Capacity	>80 x 2 ml vials or more		
Injection Precision	<0.5% RSD or better		
Carry over	0.005% from previous injection		
Tray Temperature Operating Range	4 - 40 º C or more with ±0.5 ºC accuracy		
Accessories			
HPLC Columns	One each of C8 = 250 × 4.6 × 5µm C18 = 250 × 4.6 × 5µm Cyano = 250 × 4.6 ×5µm. Amino = 250 × 4.6 × 5µm Phenyl = 250 × 4.6 ×5µm. Silica = 250 × 4.6 × 5µm. All columns must be supplied with respective guard columnand holder		

Accessories to be supplied	• Sample Vials 100 numbers with 1.5 ml or greater. • Stainless Steel Ultra Sonic bath with the capacity of 5 L or more, with Time setting (min) 1-30min or continuous operation with LED and Push button (Should be IP 33 Protection class) for sonication of spare parts as well as solvents. • Mobile phase filter assembly (2 L) for aqueous and organic solvent: Aqueous and organic solvent compatible membranes 0.22 microns 100 numbers each • Oil free vacuum pump (1 no.) with 4 bar pressures or better should be Neoprene diaphragm based. • Fittings, Frits, ferules and Tubing's • Tubing cutter (2 no.) • Solvent bottles (12 no. each 1000 ml capacity) • Solvent filters (Glass & SS both, 08 no. each) • Compatible Manual syringes -10 µl, 20 µl, 50 µl (02 no.each)		
	• Standards for HPLC Calibration for PDA, RI and Fluorescence detector • Spare lamps for each detector • Consumables required for each detector must be provided		
Software and Hardware	Complete system and software configuration must be 21 CFR Part 11 compliant. Software: Database version software with multitasking and capable of performing the following functions: Control the system, acquire, store, process and reproduce the data. It must be able to control all the devices from same software		
PC with Printer	Latest Factory set, branded system with 22-23" Full HDMonitor with licensed OSs, MS office standard version and Antivirus for 3 year with Printer - B/W - duplex - laser - Legal,A4 - 1200 dpi x 1200 dpi - up to 21 ppm – capacity with Network		

	Card and Bluetooth facility		
Service Contract Clauses, Including Prices	List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs infuture after guarantee/warranty period should be attached;		
Supplier/ Manufacturer	Must be ISO certified for quality		
Operating manuals, service manuals, other manuals	Should provide 2 sets (hardcopy and soft-copy) of: - • User, technical and maintenance manuals to be supplied inEnglish language along with machine diagrams; • List of equipment and procedures requiredfor local calibration and routine maintenance; • Service and operation manuals (original and copy) to beprovided; • Advanced maintenance tasks documentation, if any.; Certificate of calibration and inspection		
Recommendations or Warnings	Any warning signs would be adequately displayed		
Warranty	Warranty for 2 years, extendable up to 3 years, after satisfactory installation and working excluding consumableparts and accessories.		
Training	The supplier will have to carry out successful Installation at thelaboratory premises (where ever the system has to be installed) and provide on-site comprehensive training for a minimum oftwo scientific personnel operating the system till customer satisfaction		
List of Spares and Accessories	List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached		
UPS	Suitable true on - line UPS (10 KVA) to support the instrumentback up for 60 mins.		

Quality Requirement	Should be compliant with the requirements of FDA/CE/BIS • Quality Certification: ISO certified. • Should provide calibration certificates from NABL accredited agency every year during warranty & CMCperiod. Calibration cost will have to be borne by the supplier.		
IQ/PQ/OQ	On site IQ, OQ of instrument along with document to be provided & supplier to assist till satisfactory PQ of instrument		
After sales service/ Post warranty	• Contact details of manufacturer, supplier and local service agent to be provided, including toll free/ Landline Number; • Should have a good after sales service/technical support capable of reaching at short notice the places where instrument is installed. Visits and unlimited breakdown calls by service/application support, engineers should attend immediately without fail. • Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warranty shall be quoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified		
Compliance statement	The quote should also include a compliance statement vis-à- vis specifications in a "tabular form" clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will resultin disqualification.		

Outage conditions	After two years of warranty period, 3 years of CAMC shall be undertaken by the supplier. This would also include: i. Preventive maintenance service: The seller will provide a minimum of two Preventive Maintenance Service visits during a year to the operating base to carry out functional checkups and minor adjustments/tuning as may be required. ii. Breakdown Maintenance Service: In case of any breakdown of the equipment/system, on receiving a call from the buyer, the seller is to provide maintenance service to make the equipment/system serviceable. iii. Response time: The response time of the seller should not exceed 48 hours from the time the breakdown intimation is provided by the Buyer. iv. Serviceability of 90% per year is to be ensured. This amounts to total maximum downtime of 37 days per year. Also unserviceability should not exceed 2 working days at one time. Required spares to attain this serviceability may be stored at site by the seller at his own cost. Total down time would be calculated at the end of the year. If downtime exceeds permitted downtime 'Liquidated Damages' would be applicable for the delayed period. v. Maximum repair turnaround time for equipment/system would be 3 days. However, the spares should be maintained in a serviceable condition to avoid complete breakdown of the equipment/system		

5. ANALYTICAL BALANCE

Application: An analytical balance is used to measure mass to a high degree of precisionand accuracy. It is most often found in a laboratory setting and is used for accurate weighing.
Balances should be housed in a draft-free location and on a vibration free bench. Some Modern balances have built-in calibration masses to maintain accuracy

Specification	**Requirement**
Capacity	200 g/ 210 g/ 220 g
Least count	0.0001 g (0.1mg)
Readability	0.1mg (0.0001 gm) or 0.1 mg (0.0001 gm)Lab can choose the readability required
Repeatability (Standard deviation)	±0.1 mg
Linearity	0.2 mg or better
Response time	Less than 10 sec
Stabilization (typicaland fast)	Approx. 4.0 sec (0.1mg) / 15 sec (0.01mg)
Weighing pan	a) Circular/square/rectangular b) Single Pan Top c) Grid type d) Eccentric load deviation 0.2/0.25 mg
Minimum overall diameter of pan	8-10 cm
Tare facility	Yes
Calibration (internal)	• Fully automatic, time/temperature controlled internal calibration • Should be capable to adjust itself • Must be provided with calibration certificate by anagency accredited by NABL or with traceable to International

	Standard.
Balance leveling	Balance should indicate immediately as & when it is required to be leveled and should have the facility for horizontal plane calibration (mercury bubble adjustment), if not otherwise available.
Weight Box traceableto international standards	1. 1 mg - 200 g, E2 (1 no) 2. Accuracy class acc. to OIML R111: E2 3. Nominal mass value: 1 mg to 200 g. Up to 500 mg as wire weights 4. Material: special steel, non-magnetizable, density 8.0 g/cm^3, highly corrosion-resistant, knob weights highlypolished and laser marked, in wooden case.
Operational requirements	• Digital display: Backlit display with soft touch screen operation along with accessibility to date and time etc. • To have inner adjustable draft shield • Glass draft shield with flexible configuration for left/righthand operation • Weighing with automatic and manual start and provision for data interface the manufacturer to provide the specificationdata needed to facilitate calculation of uncertainty Optional: Printer should be available with USB port fordata transfer.
Environmental factors	• Safety for electromagnetic compatibility • Permanent shock absorption facility • Capacity of operating in temperature range between -5 degC to45 deg C and relative humidity of 80%
Supplier/ manufacturer	Must be ISO certified for quality
Service contract clauses, including prices	List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached
Operating manuals, service manuals, othermanuals	Should provide: - User, technical and maintenance manuals in English language List of procedures required for local calibrationand routine maintenance Service and operation manuals to be provided Advanced maintenance tasks documentation, if any.
Recommendations or Warnings	Any warning signs would be adequately displayed
Warranty	2 years after satisfactory installation and workingexcluding consumable parts and accessories.
Training	The supplier must carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on-site comprehensive training for a minimum of twoscientific personnel operating the system till customer satisfaction

List of Spares andAccessories	List of all the spares and accessories (including minor) with part numbers and price, required for maintenance and repairs infuture after guarantee/warranty period should be attached
Back-up rechargeablebattery	Back-up battery for use of equipment during power shut down.
Quality Requirement	Should be compliant with the requirements of FDA/CE/BIS Electrical safety conforms to the standards for electrical safety IEC60601- General requirements (or equivalent BIS Standard) Certified to be compliant with IEC 61010-1, IEC 61010-2-40 forsafety Should have necessary certification for safety and quality standards from national/ international bodies
IQ/PQ/OQ	On site IQ, OQ of instrument along with document to be provided& supplier to assist till satisfactory PQ of instrument
After sales service/ Post warranty	Contact details of manufacturer, supplier and local service agentto be provided, including toll free/ Landline Number; Should have a good after sales service/technical support capable of reaching at short notice the places where instrumentis installed. Visits and unlimited breakdown calls by service/application support, engineers should attend immediately without fail. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warranty shallbe quoted. Terms and conditions for the comprehensive AMC, afterthe warranty period has to be specified
Compliance statement	The quote should also include a compliance statement vis-à-vis specifications in a “tabular form” clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result in disqualification.

6. HOT AIR OVEN (FORCED AIR CONVECTION OVEN)

Application: Hot air ovens are used in the lab to determine the moisture content offood products and for drying glassware

Specification	**Requirements**
Size	Inner Volume 200 – 250 L
External Body	Mild Steel with powder coated/ Stainless Steel 304 Grade
Internal Chamber	Stainless Steel 304 Grade
Insulation	Mineral Wool/ Ceramic Wool
Door	Inner: Stainless Steel 304 Grade Outer**:** Powder coated Mild Steel/ Stainless Steel 304 Grade Self-closing magnetic lock having door sealing material suitable to high temp
Adjustable Shelf	2– 3 Perforated Stainless-Steel shelves (Removable) 304 Grade
Shelf Rest Pitch	30 mm
Temperature Range	40 ^{0}C to 300 ^{0}C

Least Count	0.1^0C
TemperatureAccuracy	± 0.5^0C or better
Temperature Uniformity	±2^0C or better
Heating Element	Nichrome wire / Kanthal A1/SS tube/pipe heater
Time to attain Maximum Temperature	Approximately 90 minutes
Control Panel	Door mounted Digital LCD display for set temperature, attained temperature, set time, heating ON/OFF
Preset Timer	With buzzer Digital display of time Least count- 1 minute
Circulation Method	Blower
Power Source	220-240 V, Single phase
Exhaust Port	30 mm ID on opposite side walls
Safety Device	Self-diagnosis function including overshoot/undershoot of temperature and overcurrent protection Audio Visual alarm for door opening after 2 minutes
Optional Requirements	Dot Matrix Printer interface Temperature chart recorder PLC Controller Audio / visual alarm Extra shelves Heating Thermostat Manufacturer calibration certificate for three different temperature points from ISO 17025/NABL accredited laboratory
Operating manuals,	Should provide:
service manuals, other manuals	• User, technical and maintenance manuals in English language • List of equipment and procedures required for local calibration and routine maintenance Service and operation manuals to be provided Advanced maintenance tasks documentation, if any.
Recommendations or Warnings	5. Any warning signs would be adequately displayed
Warranty	Warranty for 2 years, extendable up to 3 years, after satisfactory installation and working excluding consumable parts andaccessories.
Training	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) andprovide on-site comprehensive training for a minimum of two scientific personnel operating the system till customer satisfaction
List of Spares andAccessories	List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached

UPS	Suitable on - line UPS (10 KVA) to support the instrument.
Quality Requirement	Should be compliant with the requirements of FDA/CE/BIS Quality Certification: ISO certified. Should provide calibration certificates from NABL accredited agency every year during warranty & CMCperiod. Calibration cost will have to be borne by the supplier. Equipment should be FDA / CE certified or equivalent standard of repute. It should be ISO 9001:2000 or other equivalent All calibration certificates must be from ISO 17025: 2017 certified laboratory
IQ/PQ/OQ	On site IQ, OQ of instrument along with document to be provided & supplier to assist till satisfactory PQ of instrument
After sales service/Postwarranty	Contact details of manufacturer, supplier and local service agentto be provided, including toll free/ Landline Number; Should have a good after sales service/technical support capable of reaching at short notice the places where instrument is installed. Visits and unlimited breakdown calls by service/applicationsupport, engineers should attend immediately without fail. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warrantyshall be quoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified
Compliance statement	The quote should also include a compliance statement vis-à-vis specifications in a "tabular form" clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result in disqualification.

7. MUFFLE FURNACE

Application: A muffle furnace generates the high-temperature up to 1600 □C and turns the sample into ash. The chemical composition can be determined easily afterdetermining the ash content. It is the best way to determine the quality and levels of silica of the food products.

Specification	**Requirements**
Inside Chamber Volume	7 L or better With lift door with hot surface facing away from the operator and swing aside door at thefront
Furnace construction	Double shell steel case with cooling fan to keepoutside case cool High purity alumina fiber insulation for max. energy saving

Temperature Range	900 - 1600 ^{O}C
Standard WorkingTemperature	1200^{O}C
Temperature accuracy	+/- 1.0 ºC
Heating element	The chamber section should be heated by six to eight SuperKanthal Molybdenum disilicide heating elements (Super 1800 grade MoSi2)suspended in a chamber made of high temperature refractory fiber lined with a combination of ceramic fibre blankets
Heating rate	The furnace should be of fast heating type with the maximum attainable temperature should reach as a ramp function inless than one hour.
Thermocouple	Pt. Pt. Rh. Thyristor controller will be provided along with thefurnace to measure the temperature with Recrystalized aluminasheath & connecting holder complete set.
Temperature Control	PID automatic and programmable powercontrol with necessary safety features Over-temperature limiter with adjustable cut-out temperature for thermal protection class 2 in accordance with EN 60519-2 as temperature limiter to protect the furnace and load
Cooling Fan/ Air Circulation	Attached with Furnace, provided inside the control unit to protect Costly component
Maximum power	Up to 8 KW
Accessories to besupplied	Al_2O_3 Sample Plate 1 pcs Al_2O_3 Furnace Door Block 1pcs Protection Glove 2 pairsCrucible Clip 1 pair Crucibles 6 pcs
Calibration Certificate	From ISO 17025/NABL accredited laboratory
Installation, training and commissioning	Vendor must ensure satisfactory installation and commissioning ofthe system.
Operating manuals, service manuals, othermanuals	Should provide • User, technical and maintenance manuals in Englishlanguage • List of equipment and procedures required for local calibrationand routine maintenance • Service and operation manuals to be provided Advanced maintenance tasks documentation, if any.
Recommendations or Warnings	Any warning signs would be adequately displayed
Warranty	2 years after satisfactory installation and working excluding consumable parts and accessories. Provision should be theretoextend the warranty up to 3 years (at least)

Training	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) andprovide on-site comprehensive training for a minimum of two scientific personnel operating the system till customer satisfaction
List of Spares and Accessories	Provide list of all essential spares and accessories
UPS	UPS/Stabilizer as required for functioning of the equipment
Quality Requirement	Should be in compliance with the requirement of FDA/CE/BIS. Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (orequivalent BIS Standard) Certified to be compliant with IEC 61010-1, IEC61010-2-40for safety Should have necessary certification for safety and qualitystandards from national/ international bodies
IQ/PQ/OQ	6.On site IQ, OQ of instrument along with document to be provided& supplier to assist till satisfactory PQ ofinstrument
After sales service/Postwarranty	Contact details of manufacturer, supplier and local serviceagent to be provided, including toll free/ Landline Number; Should have a good after sales service/technical support capable of reaching at short notice the places where instrument is installed. Visits and unlimited breakdown calls by service/application support, engineers should attendimmediately without fail. Should carry out yearly PMwith at least one PM kit 7. Comprehensive AMC cost/rate for 3 years after warranty shall be quoted. Terms and conditions for thecomprehensive AMC, after the warranty period has to be specified
Compliance statement	The quote should also include a compliance statement vis- à-vis specifications in a “tabular form” clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submittedwill result in disqualification.

8. FUME HOOD

Application: It is a safety equipment used in all chemical laboratories to limit human exposure to hazardous or toxic fumes, vapours or dusts. Fume Hoods with floor mounted systems are designed to meet the challenges when working with chemicals, chemicalfumes and other flammable materials etc. with a high degree of efficiency.

Specification	Requirement
Coupling	Direct
Balancing	Dynamically
Type of Filter	HEPA
Overall Dimensions / Working Size	The system should have following Overall Dimensions: Overall Length of Fume Hood: 1500 -1550 mm Overall Width of Fume Hood: 750 - 1500 mm Overall Height of Fume Hood: 1500 – 2500 mm Length of Base Cabinet: 1000 – 1500 mm Height of Base Cabinet: 700 - 800 mm
Body Features	Double Wall Construction Body thickness: 10 mm (Min.) Completely made from GI sheet with Highlycorrosion resistant epoxy powder coating Inner Chamber - Chemical & Heat Resistance, Fire retardant, smooth finish, easily cleanable, made out of durable PRL sheets of thickness 5 mm (Min.)/ SS 304 of18-20 gauge thickness. Should be provided with Fume Hood installation Kit andAccessories Should be provided with Safety Device Trip
Working Table Top	Granite / M.S Powder Coated Sheet Covered with P.PSheet/SS 304 Thickness of granite 18 mm (Min.)
Utility connections	Should be provided with Utility Pipe lines for Nitrogen,Compressed Air, Water
Outer Covering (MoC)	CRC, 18G, Epoxy Powder Coated
Exhaust Duct	Chemically Resistant, PVC/PP duct pipe Provided with bends, dampers, transitions andclamps up to blower All joints should be curved in order to avoid any backtracking of fumes and a smooth flow to exhaust fumes Two exhaust ports connected to the fume hood exhaust system internally
Sink & Tap	Size: 100 – 200 mm Shall made of chemically resistant material No leakage shall observe from Outlet Nipple Shall be provided with Single way / Three-way swannecktap
Baffle Arrangement:	Removable, Chemically Resistant PVC Back Baffle to capture and remove/ slide fumes instantly at faster speedThree-point suction system (for light, normal & heavy fumes) with baffle to ensure smooth and immediate removal exhaust of fumes.

Exhaust Blower & Motor	Motor: Centrifugal Type, Motor Blower: 1.0 HP motor (3 phase, 50Hz, AC Supply) withphase MCB. Direct Driven, totally enclosed fan-cooled (TEFC), Squirrel Cage Induction Motor • Chemical & heat resistance heavy-duty epoxy coatedMin. 4 Watt
Scaffold/ Grid	Should be provided to hold the chemicals andapparatus
Door / Sash/ Shutter	Thickness – 4 mm (min.) Material - Toughened Glass Door vertical Folding Type with adjustable height
Air Flow	Low Constant Volume Exhaust Type Approx. 100 cubic meter/ hour
Noise Level	Not more than 65 dB
Face Velocity	0.5 m/s or 100 feet per minute
Shelves in Base StorageUnits/ Cabinets	Number – 2 Type – Movable (With or Without Wheels)
Illumination	Florescent Lights – 2 nos. (Min.), 40 Watt
Electrical Arrangements	Min. 2 Nos. 15/5 amps 3 pin electric socket • Switch for blower;Switch for Lightings
Power Requirement	e) 220/ 230 Volts
Operating manuals, service manuals, othermanuals	Should provide • User, technical and maintenance manuals in Englishlanguage • List of equipment and procedures required for localcalibration and routine maintenance f) Service and operation manuals to be provided Advanced maintenance tasks documentation, if any.
Recommendations orWarnings	Any warning signs would be adequately displayed
Warranty	Warranty for 2 years, extendable up to 3 years, after satisfactory installation and working excluding consumableparts and accessories.
Training	The supplier will have to carry out successful Installation at
	the laboratory premises (where ever the system has to be installed) and provide on-site comprehensive training for a minimum of two scientific personnel operating the system till customer satisfaction
List of Spares andAccessories	List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs infuture after guarantee/warranty period should be attached

Quality Requirement	Should be compliant with the requirements of FDA/CE/BIS • Quality Certification: ISO certified. • Should provide calibration certificates from NABL accredited agency every year during warranty & CMC period. Calibration cost will have to be borne by the supplier. • Equipment should be FDA / CE certified or equivalent standard of repute. It should be ISO 9001:2000 or otherequivalent. • All calibration certificates must be from ISO 17025:2017certified laboratory
IQ/PQ/OQ	On site IQ, OQ of instrument along with document to be provided & supplier to assist till satisfactory PQ of instrument
After sales service/ Postwarranty	Contact details of manufacturer, supplier and local service agent to be provided, including toll free/ Landline Number; Should have a good after sales service/technical support capable of reaching at short notice the places where instrumentis installed. Visits and unlimited breakdown callsby service/application support, engineers should attend immediately without fail. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warrantyshallbe quoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified
Compliance statement	The quote should also include a compliance statement vis- à-vis specifications in a "tabular form" clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result indisqualification.

9. pH METER

Application For food analysis, pH adjustment of buffers, solvents etc. with a comprehensive range of features and functions, making it suitable for general laboratory,QC and GLP based applications

Specifications	**Requirement**
Unit	Consisting of Tri-combination pH/ATC electrode with anelectrode holder/arm with smooth movement and protectioncover
Working pH Range	0 – 14 pH
pH resolution	± 0.01 pH
Mv	Range 0 - ± 1999 Accuracy± 1mV Resolution 1 mV
Temperature Compensation	0 to 100 ° C with ATC

Temperature	Range -10 to +105°CResolution0.1°C Accuracy ±0.5°C ATC range 0 to 100°
Calibration Points	• Should have 3 stage calibration with autobuffer recognition • B spectrophotometer uffer set 500 ml each (pH4.0,7.0 & 9.0).
Alarm	Calibration reminder interval (1 to 999hrs)
Temperature Compensation	Automatic
Display	Backlit blue LCD with operation icon digital display with 0.001 pH unit readability
Accessories	Extra Electrode • Standard buffer solution (pH 4.0, 7.0, 9.0 x500mlfor each bottle) Standard electrode holder AC /DC Adaptor.
Power	9V DC
Data storage& Output	• Data storage facility and record maximumand minimum value. RS.232C output and supply Data connector cable.
Documents Certificates Performance and safety standards (specific to the device type); Local and/orinternational	Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements(or equivalent BIS Standard) Certified to be compliant with IEC 61010-1,IEC61010-2-40 for safety Complete with IQ, OQ, PQ, Documents, Operations and Maintenance manuals
Supplier/ Manufacturer	Must be ISO certified for quality
Service contract clauses,including prices	List of all spares and accessories (including minor)with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached.
Operating manuals, service manuals, other manuals	Should provide 2 sets (hardcopy and soft-copy) of: User, technical and maintenance manuals to be supplied in English language along with machinediagrams; List of equipment and procedures required for local calibration and routine maintenance; Service and operation manuals (original and copy)to be provided Certificate of calibration and inspection
Operation and maintenance training	The supplier will have to carry out successful installation atour laboratory premises (where ever thesystem has to be installed) and provide on — site comprehensive training for scientific personnel operating the system and support services till customer satisfaction with the system.

After sales service/ Postwarranty	Contact details of manufacturer, supplier and local serviceagent to be provided, including toll free/ Landline Number;Should have a good after sales service/technical support capable of reaching at short notice the places where instrumentis installed. Visits and unlimited breakdown calls by service/application support, engineers should attend immediately without fail. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warrantyshall be quoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified
Warranty	2 years after satisfactory installation and working excluding consumable parts and accessories. Provisionshould be there toextend the warranty up to 3 years (at least)
Compliance statement	The quote should also include a compliance statement vis-à-vis specifications in a "tabular form" clearly stating the compliance and giving justification, if any supported by technical literature. This statement mustbe signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result in disqualification.

10. TURBIDITY METER

Application: Turbidity meter is used for the detection of turbidity of liquids and aqueoussolutions

Specification	**Requirement**
Type	Bench Top
Range	0-1000 NTU
Principle of Operation	Nephelometric
Automatic Range Selection	0.01 to 19.99 NTU, 20.0 to 99.9 NTU, 100 to 1000 NTU
Accuracy	± 2% of reading ± 1 digit for 0 – 500 NTU ±3%of reading ±1 digit for 501 – 1000 NTU
Response Time	Less than 6 seconds
Calibration	4 points
Calibration Kit	set 3 sample vials
Resolution	0.01 NTU (0 to 19.99 NTU), 0.1 NTU (20 to 99.9 NTU),1 NTU (100 to 1000 NTU)
Display	Digital LED
Light Source	Tungsten halogen Lamp/ Infra-Red Emitting diode
Detector	Photo Diode
Connectivity	RS232 interface

Operating manuals, service manuals, othermanuals	Should provide • User, technical and maintenance manuals in Englishlanguage • List of equipment and procedures required forlocalcalibration and routine maintenance • Service and operation manuals to be provided Advanced maintenance tasks documentation, ifany.
Recommendations orWarnings	Any warning signs would be adequately displayed
Warranty	2 year after satisfactory installation and working excluding consumable parts and accessories. Provision should be there to extend the warranty up to 3 years (at least)
Training	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on-site comprehensive training for a minimum of two scientific personnel operating the system till customer satisfaction
List of Spares andAccessories	Instrument should have all the standard accessories like silicone oil, oiling cloth, filter assembly, sample cellswithcaps, turbidity standardization kit, Calibration kit, Certified values of Certified Reference Materials (CRM) provided by an accredited Reference Material Producerwith stated metrological traceability to the SI And dust coverat the time of supply
UPS	UPS/Stabilizer as required for functioning of the equipment
Quality Requirement	Should be compliant with the requirements of FDA/CE/BIS Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent BIS Standard) Certified to be compliant with IEC 61010-1, IEC61010-2-40 for safety Should have necessary certification for safety and quality standards from national/ international bodies
IQ/PQ/OQ	On site IQ, OQ of instrument along with document to be provided & supplier to assist till satisfactory PQ of instrument
After sales service/ Postwarranty	Contact details of manufacturer, supplier and local service agent to be provided, including toll free/ Landline Number; Should have a good after sales service/technical support capable of reaching at short notice the places where instrument is installed. Visits and unlimited breakdown callsby service/application support, engineers should attend immediately without fail. Should carry out yearly PM with at least one PM kitComprehensive AMC cost/rate for 3 years after warranty shallbe quoted. Terms and conditions for the comprehensiveAMC,after the warranty period has to be specified

Compliance statement	The quote should also include a compliance statement vis-à- vis specifications in a “tabular form” clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result in disqualification.

11. CONDUCTIVITY AND TDS METER

Application: The instrument is used to measure conductivity, total dissolved solids (TDS) and temperature of the solution.

Specification	**Requirement**
Range	Conductivity: 0 µS/cm - 200 mS/cm;TDS: 0 - 200 g/L or ppt; Temperature: 0 – 100 °C
Resolution	Conductivity: 0.01µs/cm - 200.0 mS/cmTDS: 0.01 mg/L or ppm to 0.1 µg/L or ppt; Temperature: 0.1 °C
Accuracy	Conductivity: ±1% full-scale; TDS: ±1% full-scale; Temperature: ± 0.5 °C
Calibration	Calibration by certified reference material traceable to SI units orISO 17034.
Ready Indicator	Should inform when readings are stable
Selectable Cell Constant	Yes
Auto-Ranging	Across 5 Conductivity and TDS ranges Up to 5-point push button Calibration
Non-Volatile Memory	Shall hold up to 100 data points
Integral Electrode Holder	Yes
USB port	Yes
Display	LED
Additional Requirements	Certified values of Certified Reference Materials (CRM)provided by an accredited Reference Material Producer with statedmetro logical traceability to the SI Calibration certificate and inspection
Accessories	Electrode holder One spare electrode
Operating manuals, service manuals, othermanuals	Should provide • User, technical and maintenance manuals in English language • List of equipment and procedures required for localcalibration and routine maintenance • Service and operation manuals to be provided Advanced maintenance tasks documentation, if any.
Recommendations or Warnings	Any warning signs should be adequately displayed

Warranty	At least 2 years for electrode extendable up to 3 years on meter
Training	The supplier will have to carry out successful Installation atthe laboratory premises (where ever the system has to be installed) and provide on-site comprehensive training for a minimum of two scientific personnel operating the system till customer satisfaction
List of Spares andAccessories	List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached
Battery back-up	Suitable rechargeable battery
Quality Requirement	Should be compliant with the requirements of FDA/CE/BIS Electrical safety conforms to the standards for electrical safetyIEC60601- General requirements (or equivalent BIS Standard) Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety Should have necessary certification for safety and quality standards from national/ international bodies
IQ/PQ/OQ	On site IQ, OQ of instrument along with document to be provided &supplier to assist till satisfactory PQ of instrument
After sales service/Post warranty	Contact details of manufacturer, supplier and local service agentto beprovided, including toll free/ Landline Number; Should have a good after sales service/technical supportcapable ofreaching at short notice the places where instrument is installed. Visits and unlimited breakdown calls by service/application support,engineers should attend immediately without fail. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warrantyshall be quoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified
Compliance statement	The quote should also include a compliance statement vis-à-vis specifications in a “tabular form” clearly stating the compliance andgiving justification, if any supported by technical literature. This statement must be signed, with the company seal, for itsauthenticity and acceptance that any incorrect or ambiguous information foundsubmitted will result in disqualification.

12. HOT PLATE CUM MAGNETIC STIRRER

Application: Hot plates are generally used to heat liquids. Hot plate with magneticstirrer also contain a magnetic stirrer, allowing the heated liquid to be stirred automatically

Specification	**Requirement**
Set-up plate material c	Ceramic
Set-up plate dimensions	180 x 180 mm or better
Number of stirringpositions	1
Stirring quantity max. per stirring position (H2O)	20 L

Motor rating output	9 W
Direction of rotation	Right / left with automatic reverse rotation yes
Speed and Temperature display set-value /actual	LCD rpm/□C
Speed and temperature control	Turning knob
Speed range	50 - 1500 rpm
Speed deviation (no load, nominal voltage at 1500rpm and 25 °C)	± 2 %
Stirring bar length	30 - 80 mm
Self-heating of the set-upplateby max. stirring	1 □C at RT:22°C/duration:1h)
Heat output	1000 W
Temperature setting range	0 - 100 °C
Temperature settingresolution	2□C
Heat control accuracy of heating plate (at 100°C)	±5 □C
Connection for ext. temperature sensorPT1000,	Yes
Timer	Yes
Operating manuals, servicemanuals, othermanuals	Should provide • User, technical and maintenance manuals in Englishlanguage • List of equipment and procedures required for localcalibration and routine maintenance • Service and operation manuals to be provided Advanced maintenance tasks documentation, if any.
Recommendations or Warnings	Any warning signs would be adequately display
Warranty	Warranty for 1 year, extendable up to 3 years, after satisfactory installation and working excluding consumable parts and accessories.
Training	The supplier will have to carry out successful Installation at the laboratory premises (where everthe system has to be installed) and provide on-sitecomprehensive training for a minimum of two scientific personnel operating the system till customer satisfaction
List of Spares andAccessories	List of all spares and accessories (including minor) withpart numbers and price, required for maintenance and repairs infuture after guarantee/warranty period should be attached

Quality Requirement	Should be compliant with the requirements of FDA/CE/BIS • Quality Certification: ISO certified. • Should provide calibration certificates from NABL accredited agency every year during warranty & CMCperiod. Calibration cost will haveto be borne by the supplier. • Equipment should be FDA / CE certified or equivalent standard of repute. It should be ISO 9001:2000 or other equivalent All calibration certificates must be from ISO 17025:2017 certified laboratory
IQ/PQ/OQ	On site IQ, OQ of instrument along with document to be provided & supplier to assist till satisfactory PQ ofinstrument
After sales service/ Postwarranty	Contact details of manufacturer, supplier and local service agent to be provided, including toll free/ Landline Number; Should have a good after sales service/technical support capable of reaching at shortnotice the places where instrument is installed. Visits and unlimited breakdown callsby service/application support, engineers should attend immediately withoutfail. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warrantyshall be quoted. Terms and conditions for thecomprehensive AMC, after the warranty period has to be specified
Compliance statement	The quote should also include a compliance statementvis-à-vis specifications in a “tabular form” clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result in disqualification.

13. VORTEX MIXER (CYCLOMIXER)

Application: Vortex Mixer is a general-purpose laboratory equipment. It is used formixing liquids in test tubes. It operates at various speed and can be operated continuously or by “touch” activation.

Specification	**Requirement**
Speed and control	User settable 200 - 3000 rpm or better
Operating Modes	ON (continuous), OFF, and TOUCH mix
Head	Standard rubber cup
Base	Heavy metal with Four suction cups
Movement	Orbital type movement

Accessories	Flat head Horizontal head, 12 x 1.5 mL Horizontal head, for 4 x 15 mL
Low Speed Operation Should Be Possible in Touch Activated Operation	Yes
Operation Type	Low Noise
Power Supply	200-240Vac 50Hz
Operating manuals, service manuals, other manuals	Should provide • User, technical and maintenance manuals inEnglishlanguage • List of equipment and procedures required forlocalcalibration and routine maintenance • Service and operation manuals to be providedAdvanced maintenance tasks documentation, if any.
Recommendations or Warnings	Any warning signs would be adequately displayed
Warranty	2 years after satisfactory installation and working excluding consumable parts and accessories. Provision should bethereto extend the warranty up to 3 years (at least)
Training	The supplier will have to carry out successful installation atthe laboratory premises (where ever the system has to be installed) and provide on-site comprehensive training for a minimum of two scientific personnel operating the system tillcustomer satisfaction
List of Spares and Accessories	List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached
UPS	UPS/Stabilizer as required for functioning of the equipment
Quality Requirement	Should be compliant with the requirements of FDA/CE/BIS • Electrical safety conforms to the standards for electricalsafety IEC 60601- General requirements(or equivalent BIS Standard) • Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety • Should have necessary certification for safety and qualitystandards from national/ international bodies

After sales service/ Post warranty	Contact details of manufacturer, supplier and local service agent to be provided, including toll free/ Landline Number; Should have a good after sales service/technicalsupport capable of reaching at short notice the places where instrument is installed. Visits and unlimited breakdown callsby service/application support, engineers should attend immediately without fail. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warrantyshall be quoted. Terms and conditions for the comprehensiveAMC, after the warranty period has to be specified
Compliance statement	The quote should also include a compliance statement vis-à-vis specifications in a "tabular form" clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with the company seal, for its authenticity and acceptancethat any incorrect or ambiguous information found submitted willresult in disqualification.

14. HOT PLATE

Application: Hot plates are generally used to heat liquids as a part ofsample preparation for analysis

Specification	**Requirement**
Heating Plate	Top Plate Material - Cast Iron Top Plate Finish – Ceramic Coated resistant to acids,bases Body Material – Mild Steel Finish – Powder Coated Should include a separate Temperature Control UnitwithPTFE or any acid resistant cord connection Ideal for heating samples and concentrated acids
Size (Dimension) &Shape	10 x 12 inches (minimum), Rectangular or Circular
Max. Heating Plate Temperature	Maximum temperature 250°C and accept up to 2L flasks /1Lbeakers
Controller	Energy Regulator
Power Supply	220 / 230 Volts, 50 Hz
Optional	Overhead stirrer PID Controller Stainless steel heating plate Support stand Digital setting and display for temperature and time Hotplate warning display while cooling till below 50 ^{O}C

Operating manuals, service manuals, othermanuals	Should provide • User, technical and maintenance manuals in Englishlanguage • List of equipment and procedures required forlocalcalibration and routine maintenance • Service and operation manuals to be provided • Advanced maintenance tasks documentation, if any.
Recommendations or Warnings	Any warning signs would be adequately displayed.
Warranty	Warranted for 2-year, extendable up to 3 years, aftersatisfactory installation and working excluding consumable parts and accessories.
Training	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on-site comprehensive training for a minimum of two scientific personnel operating the system till customer satisfaction
List of Spares and Accessories	List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached
Quality Requirement	Should be compliant with the requirements of FDA/CE/BIS • Quality Certification: ISO certified. • Should provide calibration certificates from NABL accredited agency every year during warranty & CMCperiod. Calibration cost will have to be borne by the supplier. • Equipment should be FDA / CE certified or equivalent standard of repute. It should be ISO 9001:2000 or other equivalent • All calibration certificates must be from ISO 17025:2017 certified laboratory
After sales service/ Post warranty	Contact details of manufacturer, supplier and local service agent to be provided, including toll free/ Landline Number; Should have a good after sales service/technical support capable of reaching at short notice the places where instrumentis installed. Visits and unlimited breakdown callsby service/application support, engineers should attend immediately without fail. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warrantyshall be quoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified
Compliance statement	The quote should also include a compliance statement vis- à-visspecifications in a “tabular form” clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with thecompany seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will resultin disqualification.

15. SEROLOGICAL WATER BATH

Application: The water bath is for routine use in microbiology protocols as well forproper suspension of microbes in the medium with precise temperature control	
Specification	**Requirement**
Material of construction	Rounded, seamless stainless-steel bath topreventingrust, chemical damage and contamination. Powder coating like epoxy coating exterior foreasycleanup Corrosive resistant stainless-steel Gableddripfree lid
Unit	Microprocessor controlled digital display. Instrument should have lift up drip free bath cover; Carrier racks should be given for flasks andtesttubes racks. Convenient water bath drains. Water bath surface coating should preventcontaminationand formation of algae. Easy cleaning
Temperature	Temperature Range: +20°C to 99°C Temperature Accuracy: ± 0.2 °C at 37 .0°C Temperature Uniformity: ± 0.5 °C at 37 .0°C Digital LED display for operating status of TEMP Over-Temperature Cut-Off Temperature calibration function
Alarms	Audible warning safety signals should be thereforhigh/low temperature warnings Low liquid level
Calibration	Certificate from a ISO 17025 accredited lab for3different temperature points
Operation and training component	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on — site comprehensive training for a minimum of two scientificpersonnel operating the system till customer satisfaction
Certificates Performanceand safety standards (specific to the device type); Local and/or international	Should be compliant with the requirements ofFDA/CE/BIS Electrical safety conforms to the standardsforelectrical safety IEC 60601- General requirements(or equivalent BIS Standard) Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety
Supplier/ Manufacturer	Must be ISO certified for quality
Service Support Contact details(Hierarchy Wise; including a toll free/landline number)	Contact details of manufacturer, supplier and localservice agent to be provided; Any Contract (AMC/CMC/ahoc) to be declared by themanufacturer;
Recommendations or	Any warnings would be adequately displayed

Warnings	
Warranty	Warranty for 2 years after satisfactory installation and
	working excluding consumable parts and accessories.
Service contract clauses, including prices	List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached;
Operating manuals, servicemanuals, other manuals	Should provide 2 sets (hardcopy and soft-copy) of: User, technical and maintenance manuals to be suppliedin English language along with machine diagrams; List of equipment and procedures required forlocalcalibration and routine maintenance; Service and operation manuals (original and copy) tobeprovided; Advanced maintenance tasks documentation; Certificate of calibration and inspection
Compliance statement	The quote should also include a compliance statementvis-à-vis specifications in a "tabular form"clearly stating the compliance and giving justification, if any supported by technical literature.This statement mustbe signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result indisqualification.

16. FLASH POINT APPARATUS (PENSKY-MARTENS)

Application: Used to measure flash point of oils and fats by using Pensky-MartensClosedCup method for determining the quality of oils and fats and contamination.

Specification	**Requirement**
Design Ignition	Must designed in strict accordance with the testmethodASTM D93, Method A and B. Automatic movement of head for closing and opening of the cup Microprocessor controlled unit with digital easy to read display of the results
Ignition	Electric ignition and should also provide an automaticreignition facility Electric Ignitor should be encapsulated
Detection	Thermal detection (with metal sample temperatureprobe) of the flash to eliminate interference from water orsiliconecontaining compound.
Cooling	Facility for built-in cooling connection
Measuring Range	Flash point Ambient to 350 °C or more
Heating System	Heat rate: 0.5 °C to 12 °C/min. Heating should be microprocessor controlled at the specified rate; the ignitor is activated and dipped at precisely the correcttemperature and frequency
Temperature Measurement	Rugged metal and intelligent Pt 100 probe withbuilt-incalibration, min 5 calibration points

Temperature calibration	Resistance check box for temperature calibration with calibration certificate from ISO 17025/NABL accreditedlaboratory
Sample Stirrer	Automatic stirrer: test method or user-defined from 0rpm to250 rpm or more
Barometric Pressure Sensor	Built-in sensor for automatic correction of flash pointforstandard barometric pressure vis-à-vis with final result. Pressure units: Pa, kPa, bar, mbar, psi, mm Hg (Torr) etc.
User Interface	Touchscreen, alphanumeric data input, bar codereader,HDMI
Safety device	Safety device for fire protection with alarm
Power Supply	AC 100 V to 240 V, 50/60 Hz
Number of LED indicators available to indicate Power input	1
DC Voltmeter Range	0-30 Volt
DC ammeter Range	0-50 in milli Ampere
Operating manuals, servicemanuals, other manuals	Should provide • User, technical and maintenance manuals inEnglishlanguage • List of equipment and procedures required forlocalcalibration and routine maintenance • Service and operation manuals to be provided Advanced maintenance tasksdocumentation, if any.
Recommendations orWarnings	Any warning signs would be adequately displayed
Warranty	Warranty for 2 years, extendable by 3 years, after satisfactory installation and working excluding consumableparts and accessories.
Training	The supplier will have to carry out successful Installation at the laboratory premises (where ever thesystem has to be installed) and provide on-site comprehensive training for a minimum of two scientific personnel operating the system tillcustomer satisfaction
List of Spares and Accessories	List of all spares and accessories (including minor) withpart numbers and price, required for maintenance and repairs infuture after guarantee/warranty period shouldbe attached
UPS	UPS/Stabilizer as required for functioning of the equipment
Quality Requirement	Should be compliant with the requirements of FDA/CE/BISElectrical safety conforms to the standardsfor electrical safety IEC 60601- General requirements (or equivalent BISStandard) Certified to be compliant with IEC 61010-1, IEC61010-2-40 for safety Should have necessary certification for safety and quality

	standards from national/ international bodies
IQ/PQ/OQ	On site IQ, OQ of instrument along with document to beprovided & supplier to assist till satisfactory PQ of instrument
After sales service/ Post warranty	Contact details of manufacturer, supplier and local service agent to be provided, including toll free/ Landline Number; Should have a good after sales service/technical support capable of reaching at shortnotice the places where instrument is installed. Visits and unlimited breakdown callsby service/application support, engineers should attend immediately withoutfail.
	Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warranty shallbe quoted. Terms and conditions for thecomprehensive AMC,after the warranty period has to be specified
Compliance statement	The quote should also include a compliance statement vis-à-vis specifications in a "tabular form" clearly statingthe compliance and giving justification, if any supported by technical literature. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result in disqualification.
Outage conditions	After two years of warranty period, 3 years of CAMCshall beundertaken by the supplier. This would also include: Preventive maintenance service: The seller will providea minimum of two Preventive MaintenanceService visits during a year to the operating base to carry out functional checkups and minor adjustments/tuning as may be required. Breakdown Maintenance Service: In case of any breakdown of the equipment/system, on receivinga callfrom the buyer, the seller is to provide maintenance service to make the equipment/system serviceable. Response time: The response time of the sellershouldnot exceed 48 hours from the time the breakdown intimation is provided by the Buyer. Serviceability of 90% per year is to be ensured. Thisamounts to total maximum downtime of 37 days peryear. Also unserviceability should not exceed 2 working days at one time. Required spares to attain this serviceability may be stored at site by the seller at his own cost. Total down time would be calculated at the end of the year. If downtime exceeds permitted downtime 'Liquidated Damages' would be applicable forthe delayed period. Maximum repair turnaround time for equipment/systemwould be 3 days. However, thespares should be maintained in a serviceable condition to avoid complete

	c. breakdown of the equipment/system

17. LABORATORY REFRIGERATOR

Laboratory Refrigerators should offer the followings features:

Design	Vertical with wheels Frost free, CFC free, Automatic Defrost 4 – 5 Height adjustable shelves Internal LED Lighting Single Triple-Pane Glass Door with ergonomic handleKey Lock Automatic door closing Fan forced air circulation to ensure Stable & uniformpreservation environment.
Controller	Microprocessor Temp. Control Controller with 0.1ºCresolution Controller to Display data about the unit and used tocontrol temperature Control panel should be at eye level with Digital Temperature display & Alarms
Construction	Electro-galvanized steel with white, oven baked epoxy-polyester, Anti-microbial, powder-coated finish.
Capacity	300 - 350 Liters
Temperature	Range: +2^{o}C to +8^{o}C Uniformity: ±3°C
Alarm	Open door, High/Low temperature, Clogged condenserfilter
Warranty	h) Comprehensive warranty of 03 years

18. DEEP FREEZER (-20 ^{o} C)

Application: Deep freezers are used to store samples, reagents & kits, referencematerialsat low temperature i.e., around -20 ^{o} C to -40^{o} C.

Specification	**Requirements**
Capacity	360 L (12.7 cu. ft)
Door	1 solid door, steel white color with aluminum handle and powder-coated with ISOCIDE™
Door Lock	Key Lock/Electronic Lock
Type of Insulation	Polyurethane Foam
Insulation Thickness	80 mm (3.1”)
CFC and HCFC FreeRefrigerant	R452A
Default Number of Shelves	4 shelves
Maximum Number of Shelves/Drawers	6/6
Wheels	Small Caster (3.5 cm)
Temperature Range	-20^{o}C to -40^{o}C (-4^{o}F to -40^{o}F)

Temperature Uniformity inDegree Celsius	±4°C (39.2°F)
Ambient Temperature	C (+10°C to +25°C)
Controller	Standard Controller with 0.1ºC resolution, passwordprotected, Touchscreen Controller
Defrost	Intelligent Automatic
Alarms	Open door, High/Low temperature, Clogged condenser filter
Certifications	CE Mark
Dry Contacts Alarm	Dry contact to connect to remote alarms
Heat Emission	1320 W
Power Consumption (kW/24H)	13.8
Power Consumption (RunningMode)	11kW/24H
Power Consumption (Standby)	50 W
Interior Wall	AISI 304 Stainless Steel
Typical Noise Level (<dBA)	50
Internal Dimensions (W x D xH)	510 x 600 x 1255 mm (20.1“ x 23.6” x 49.4”)
External Dimensions (W x D xH)	670 x 825 x 1940 mm (26.4” x 32.5” x 76.4”)
Net Weight	145 Kg (319.7 lbs)
Shipping Weight	184 Kg (405.7 lbs)
Shipping Volume	1.61 m3 (56.9 cu. ft)
Shipping Dimensions (W x D xH)	800 x 920 x 2190 mm (31.5” x 36.2” x 86.2”)
Warranty	2 Years

19. DEEP FREEZER (-40^{o} C)

Application: Deep freezers are used to store samples, reagents & kits, referencematerialsat low temperature i.e., around -20 ^{o} C to -40^{o} C.

Specification	**Requirements**
Capacity	360 L (12.7 cu. ft)
Door	1 solid door, steel white color with aluminum handle and powder-coated with ISOCIDE™

Door Lock	Key Lock/Electronic Lock
Type of Insulation	Polyurethane Foam
Insulation Thickness	80 mm (3.1”)
CFC and HCFC FreeRefrigerant	R452A
Default Number of Shelves	4 shelves
Maximum Number of Shelves/Drawers	6/6
Wheels	Small Caster (3.5 cm)
Temperature Range	-20°C to -40°C (-4°F to -40°F)
Temperature Uniformity inDegree Celsius	±4°C (39.2°F)
Ambient Temperature	C (+10°C to +25°C)
Controller	Standard Controller with 0.1ºC resolution, passwordprotected, Touchscreen Controller
Defrost	Intelligent Automatic
Alarms	Open door, High/Low temperature, Clogged condenser filter
Certifications	CE Mark
Dry Contacts Alarm	Dry contact to connect to remote alarms
Heat Emission	1320 W
Power Consumption (kW/24H)	13.8
Power Consumption (RunningMode)	11kW/24H
Power Consumption (Standby)	50 W
Interior Wall	AISI 304 Stainless Steel
Typical Noise Level (<dBA)	50
Internal Dimensions (W x D xH)	510 x 600 x 1255 mm (20.1“ x 23.6” x 49.4”)
External Dimensions (W x D xH)	670 x 825 x 1940 mm (26.4” x 32.5” x 76.4”)
Net Weight	145 Kg (319.7 lbs)
Shipping Weight	184 Kg (405.7 lbs)
Shipping Volume	1.61 m3 (56.9 cu. ft)
Shipping Dimensions (W x D xH)	800 x 920 x 2190 mm (31.5” x 36.2” x 86.2”)

Warranty	2 Years

20. VACUUM OVEN

Application: Vacuum Drying Oven is suitable for drying out liquids or solvents containedin food samples. The moisture lost from the sample out of the vacuum oven, which prevents the accumulation of moisture within the oven. The boiling point of water is reduced when it is placed under vacuum. Drying foods in a vacuum oven therefore has anumber of advantages over conventional oven drying techniques. Drying is quicker and
can also be carried out at lower temperatures so problems associated with degradationofheat labile substances can be reduced.

Specification	**Requirement**
Useful volume	27 L or more
Shell construction	High quality fabrication of S.S body with double wall arrangement and M.S panel board with neat powder coatpainting
Door	Specially designed SS door and inner door
Insulation	Alumina fiber insulation/Rockwool
Skin temperature	Maintained just above ambient
Number of trays	Two SS Trays (Min.)
Heating elements	Heater provided around the chamber
Operation	Single phase / AC Maximum Temperature: 200ºC Temperature control: PID programmable temperature indicator Accuracy: ±1ºC Indications: Main indicator and Output indicator Control Switches: Mains on, output on and outputpowerselection Vacuum: Min 1 (One) Torr Vacuum Indication: Analog/ Digital gaugeVacuum pump: Rotary vane oil less Timer: Special timer for vacuum system
Operation function:	Fixed temperature operation, Auto-start operation,
Safety features	Self-diagnosis functions (Sensor, Heater Triac, Automatic overheating prevention), independent overheating prevention, Key lock function, Electric leakage breaker
Operating manuals, service manuals, othermanuals	Should provide: • User, technical and maintenance manuals inEnglish language • List of equipment and procedures required forlocal calibration and routine maintenance • Service and operation manuals to be providedAdvanced maintenance tasks documentation, if any.
Recommendations or Warnings	Any warning signs would be adequately displayed
Warranty	2 years after satisfactory installation and working excluding consumable parts and accessories. Provision should be there to

	extend the warranty up to 3 years (at least)
Training	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to beinstalled) and provide on-site comprehensive training fora minimum of two scientific personnel operating the system till customer satisfaction
List of Spares andAccessories	List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs infuture after guarantee/warranty period should be attached
UPS	UPS/Stabilizer as required for functioning of the equipment
Quality Requirement	Should be compliant with the requirements of FDA/CE/BIS. Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements(or equivalent BIS Standard) Certified to be compliant with IEC 61010-1, IEC61010-2-40 for safety. Should have necessary certification for safetyand quality standards from national/ international bodies
IQ/PQ/OQ	On site IQ, OQ of instrument along with document to be provided & supplier to assist till satisfactory PQ ofinstrument
After sales service/ Postwarranty	Contact details of manufacturer, supplier and local service agent to be provided, including toll free/ Landline Number; Should have a good after sales service/technicalsupport capable of reaching at short notice the places where instrument is installed. Visits and unlimited breakdown calls by service/application support, engineers should attend immediately without fail. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warrantyshall be quoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified
Compliance statement	The quote should also include a compliance statement vis-à- vis specifications in a "tabular form" clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result in disqualification.

21. KARL FISCHER TITRATOR

Application Also known as Moisture meter. Karl Fischer titration is widely used for directanalysis of water content in various foods, as a reliable and robust method. In food industry it is used for water content determination in fruit juices, honey, flour, noodles, chips, cocoa powder etc with water content less than 1%.

Specifications	Requirements

General design	The instrument should be equipped with integral magneticstirrer and inbuilt/external printer and RS232C/USB connector for balance interface and computer. The display panel and keypad should be attached with the main unit.
Titration Method	Coulometric Karl Fischer Titration
Measuring Range	10 µg to 100 mg water or better
Resolution/Sensitivity	1.0 µg H_2O
Precision	± 3 µg in 10 µg-1000 µg range and 0.3 % (maximum)above 1.0 mg
Display of Unit for Moisture	ppm, µg, mg/kg, %.
End Point Detection	AC Polarisation Constant current Polarisation method
End Point Indication	Visual Display/ Print out/ Acoustic beep
Titration vessel	Low drift cell design with no grease or PTFE sleeves
Drift correction	Automatic Control
Maximum Titration Speed	1.0 mg H_2O/minute or better
Maximum ElectrolysisCurrent	100 mA or better (Automatic electrolysis current control)
Start/End Delay Time	It should have option for Start/End Delay Time
Calculation Modes	w/w, w/dilution, volume/density, v/v
Method Memory	Yes
List of accessories to be supplied	Titration Vessel 01 No. Detector Electrode with Lead 01 No. Generator Electrode (with Frit) with Lead. 01No.Desiccant Tube and Cap 01 No. Injection Septa (Pack Of 10) 01 No.Gas Tight Syringe 1.0ml 01 No. Luer needle 17-gauge 01No.Dust Cover 01 No. Results Manager Software 01No.Main Power Pack 01 No. Fuse 05 No. Karl Fischer Titration Reagent(s) 02 SetsNIST Calibration standard 02 No.
Operating manuals, service manuals, other manuals	Should provide: - • User, technical and maintenance manuals inEnglish language • List of equipment and procedures required for local calibration and routine maintenance • Service and operation manuals to be provided • Advanced maintenance tasks documentation, if any.
Recommendations orWarnings	Any warning signs would be adequately displayed
Calibration certificate	Calibration certificate from ISO17025 for Temperature and Relative humidity.

Warranty	2-year after satisfactory installation and working excludingconsumable parts and accessories.
After sales service/ Post warranty	Contact details of manufacturer, supplier and local serviceagent to be provided, including toll free/ Landline Number;Should have a good after sales service/technical support capable of reaching at short notice the places where instrumentis installed. Visits and unlimited breakdown calls by service/application support, engineers should attend immediately without fail. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warrantyshall be quoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified
Training	The supplier should provide comprehensive training tousers on operation of the instrument and application support onsite as per specifications
List of Spares and Accessories	List of all spares and accessories (including minor) withpart numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached
Battery backup	Suitable rechargeable battery
Quality Requirement	Should be compliant with the requirements of FDA/CE/BIS Electrical safety conforms to the standards for electrical safetyIEC 60601- General requirements (orequivalent BIS Standard) Certified to be compliant with IEC 61010-1, IEC 61010-2-40for safety
IQ/PQ/OQ	On site IQ, OQ of instrument along with document to beprovided & supplier to assist till satisfactory PQ of instrument
Compliance statement	The quote should also include a compliance statement vis-à-vis specifications in a “tabular form” clearly statingthe compliance and giving justification, if any supportedby technical literature. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted willresult in disqualification.
Outage conditions	After two years of warranty period, 3 years of CAMC shallbeundertaken by the supplier. This would also include: Preventive maintenance service: The seller will provide aminimum of two Preventive Maintenance Service visits during a year to the operating base tocarry out functionalcheckups and minor adjustments/tuning as may be required. Breakdown Maintenance Service: In case of any breakdown of the equipment/system, on receiving a callfrom the buyer, the seller is to provide maintenance service to make the equipment/systemserviceable. Response time: The response time of the seller shouldnot exceed 48 hours from the time the breakdown intimation is provided by the Buyer. Serviceability of 90% per year is to be ensured. This amounts to total

	maximum downtime of 37 days per year. Also unserviceability should not exceed 2 working days at one time. Required spares to attain this serviceability may be stored at site by the seller at his own cost. Total down time would be calculated at the end of the year. If downtime exceeds permitteddowntime 'Liquidated Damages' would be applicable forthe delayed period. Maximum repair turnaround time for equipment/systemwould be 3 days. However, thespares should be maintained in a serviceable condition to avoid complete d. breakdown of the equipment/system

22. AUTOMATIC DIGITAL POLARIMETER

Application: It is used for measuring the concentration of sucrose in juices and jaggery and the purity of these products. All sugars are optically active, and therefore, their concentrationcan be conveniently measured by means of the polarimeter

Specifications	**Requirements**
Measuring Mode	Optical Rotation, Specific Rotation, Specific Rotation PlusConcentration, Sugar Scale °Z(ISS)
Display	On screen LCD / LED (touchscreen) and / or on personalcomputer via USB ports (if operating on PC, PC requirementshould be mentioned). Touch-screen will be preferred
Accuracy	0.001 deg Arc or better
Reproducibility	0.001 deg Arc optical rotation
Resolution	0.001 deg Arc optical rotation, 0.001% concentration, 0.001specific rotation
Measuring Range	± 89.9 deg Arc Optical Rotation, ± 999.99° Arc SpecificRotation, 0-99.9% Concentration
Optical Wavelength	589 nm Na and Tungsten-halogen or Hg- Lamp (for 633mm / 578 mm / 546 mm / 436 mm / 405 mm
Light Source	Sodium/Tungsten-halogen/LED with life time 100,000 h ofoperation
Prism	Glan Thompson Calcite prism with life time Guarantee
Detector	PMT
Aperture	Should be variable for low concentration measurements
Temperature Control	With In-built Peltier module; Temperature Range 15 °C to 40 °C;Temperature Accuracy: ±0. 1 deg C
Calibration Automatic	Calibration In-built via touchscreen.
Calibration Standards	Certified values of Certified Reference Materials (CRM) provided byan accredited Reference Material Producer withstated metrological traceability to the SI for sugar solutions
Response speed	Approx. 6 / sec
Measurement time	5 Measurements in less than 25 sec Avg.
Sample Compartment	Accept sample tubes up to 200 mm
Compliance	Full GMP/GLP and 21 CFR Part 11; Audit trail
Data memory	>2 GB

Interfaces:	Min. 4 USB ports, RS 232 standard or later standard, Ethernet,VGA port, CAN bus. Instrument should be compatible with common brands of PC, Keyboard, Printerand memory stick/external hard drives.
Sample cells	Two Sample cells having pyrex glass with stopper.Sample Length Sample Volume 1. 100 mm 1.5 ml 2. 200 mm 2.0 mL
Power requirements	230 V / 50 Hz – 230V/60Hz
Operating manuals, service manuals, othermanuals	Should provide: - • User, technical and maintenance manuals in Englishlanguage • List of equipment and procedures required for localcalibration and routine maintenance Service and operation manuals to be provided

23. FLAME PHOTOMETER

Application: The flame photometer is used for qualitative and quantitative determinationofseveral cations, especially for metals that are easily excited to higher energy levels at flame temperature. These metals include Na^+, K^+, Ca^{2+}, Ba^{2+}, and Li^{2+}.

Specification	**Requirement**
Measuring Range	Na^+: 0 to 199.9 ppmK^+:0 to 199.9 ppm Ca^{2+} :0-99.9 ppm Li^{2+}: 0 to 9.99 ppm
Sensitivity	Na^+= 0.1 ppmK^+ = 0.1 ppm
Specificity	less than 0.5% interference when concentrations are equalto testsample concentrations
Gas Control	Adjustable with knobs
Ignition System	Auto Ignition System
Flame Failure	Auto detection
Gas Cut off	Automatic
Reproducibility	Less than 1% coefficient of variation for 20 consecutivesamplesusing 10 ppm Na set as maximum standard
Linearity	Less than 1%
Display	LED, 12.5 mm (1/2")
Fuel supply	High-grade propane/butane mixture regulated at approximately30 psi
Air supply	6 L/min at 12 psi; oil and moisture free
Recorder	output 0.05 to 5 V (switchable)

Operating manuals, service manuals, othermanuals	Should provide • User, technical and maintenance manuals in Englishlanguage • List of equipment and procedures required for local calibrationand routine maintenance • Service and operation manuals to be provided Advanced maintenance tasks documentation, ifany.
Recommendations orWarnings	Any warning signs would be adequately displayed
Calibration Standard	Must supply traceable standard solutions for Na^+, K^+ and Ca^{2+}
Warranty	Warranted for 2 year, extendable up to 3 years, after satisfactoryinstallation and working excluding consumable parts and accessories.
Training	The supplier will have to carry out successful Installation at the laboratory premises (where ever thesystem has to be installed) and provide on-site comprehensive training for a minimum of two scientificpersonnel operating the system till customer satisfaction
List of Spares andAccessories	List of all spares and accessories (including minor)with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached
Stabiliser	Suitable Stabilizer as required for functioning of the equipment
Quality Requirement	Should be compliant with the requirements of FDA/CE/BIS • Quality Certification: ISO certified. • Should provide calibration certificates from NABLaccredited agency every year during warranty & CMC period. Calibration cost will have to be borne by the supplier. • Equipment should be FDA / CE certified or equivalent standard of repute. It should be ISO 9001:2000 or other equivalent All calibration certificates must be from ISO 17025: 2017certified laboratory
IQ/PQ/OQ	On site IQ, OQ of instrument along with document tobe provided & supplier to assist till satisfactory PQ of instrument
After sales service/ Postwarranty	Contact details of manufacturer, supplier and local service agentto be provided, including toll free/ Landline Number; Should have a good after sales service/technical support capable of reaching at short notice the places where instrument is installed. Visits and unlimited breakdown callsby service/application support, engineers should attend immediately without fail. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warranty shall be quoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified

Compliance statement	The quote should also include a compliance statement vis- à-vis specifications in a "tabular form" clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result in disqualification.

24. LOVIBOND TINTOMETER

Application: It is a visual and automated color measuring instruments synonymouswithaccuracy in the measurement of color in edible oils, beverages & foodstuffs

Specification	Requirements
Measuring principle	Visual, in terms of Lovibond® units
Modes	Transmittance, reflectance Range 0.1 - 79.9 Red,Yellow;0.1 - 49.9 Blue; 0.1 - 3.9 Neutral
Resolution	0.1 Lovibond® unit
Optical system	11 glass-filled nylon racks containing a graduatedrangeof Lovibond® color glasses
Viewing system	Fully adjustable, prismatic with integral blue filter forlight standardization
Light source	2 x 12 Volt, 10-Watt tungsten halogen lamp Illuminantapproximates to daylight
Path length	Up to 153 mm (6")
Power pack	12 Volt AC, switchable to suit 220/110 Volt supply Approvals CE Instrument housing Fabricated sheet steel with a tough,textured paint finish
Accessories	Conformance filters and certified colour reference solutionsrepresenting a range of Lovibond® colours, forquick and simple quality control checks on instruments and operators.
Operating manuals, service manuals, othermanuals	Should provide: • User, technical and maintenance manuals in Englishlanguage • List of equipment and procedures required for local calibrationand routine maintenance • Service and operation manuals to be provided Advanced maintenance tasks documentation, ifany.
Recommendations orWarnings	Any warning signs would be adequately displayed
Warranty	2 years after satisfactory installation and working excluding consumable parts and accessories. Provision should be there toextend the warranty up to 3 years (at least)
Training	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on-site comprehensive training for a minimum of two scientific personnel operating the system tillcustomer satisfaction

List of Spares andAccessories	List of all spares and accessories (including minor) with partnumbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached
UPS	UPS/Stabilizer as required for functioning of the equipment
Validation	For validation vendor should having own capability with trown company trained service engineer to perform validation No third part validation will be entertained. Onevalidation atthe time of installation should be done by company personnel
Quality Requirement	Should be compliant with the requirements of FDA/CE/BIS Electrical safety conforms to the standards for electricalsafety IEC 60601- General requirements (or equivalent BISStandard) Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety Should have necessary certification for safety and qualitystandards from national/ international bodies
IQ/PQ/OQ	On site IQ, OQ of instrument along with document to be provided & supplier to assist till satisfactory PQ of instrument
After sales service/ Post warranty	Contact details of manufacturer, supplier and local service agentto be provided, including toll free/ Landline Number; Should have a good after sales service/technical support capable of reaching at short notice the places where instrument is installed. Visits and unlimited breakdown calls byservice/application support, engineers should attend immediatelywithout fail. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warranty shallbe quoted. Terms and conditions for the comprehensiveAMC, after the warranty period has to be specified
Compliance statement	The quote should also include a compliance statement vis- à- vis specifications in a “tabular form” clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result in disqualification.
Outage conditions	After two years of warranty period, 3 years of CAMC shallbeundertaken by the supplier. This would also include: Preventive maintenance service: The seller will provide a minimum of two Preventive Maintenance Service visits during a year to the operating base to carry out functional checkups and minor adjustments/tuning as may be required. Breakdown Maintenance Service: In case of any breakdown of the equipment/system, on receiving a callfrom the buyer, the seller is to provide maintenance service to make the equipment/system serviceable.

	Response time: The response time of the seller shouldnot exceed 48 hours from the time the breakdown intimation isprovided by the Buyer. Serviceability of 90% per year is to be ensured. This amounts to total maximum downtime of 37 days per year.Also unserviceability should not exceed 2 workingdays atone time. Required spares to attain this serviceability maybe stored at site by the seller at his own cost. Total down time would be calculated at the end of the year. If downtime exceeds permitted downtime 'Liquidated Damages' would be applicable for the delayed period. Maximum repair turnaround time for equipment/system would be 3 days. However, the spares should be maintained in a serviceable condition to avoid complete breakdown of the equipment/system

25. AUTO TITRATOR

Application: The auto titrators are suitable for all of the titrations required in food analysisnamely acid-base titrations, precipitation titrations as well as complexometric andredox titrations. Applications include Citric/tartaric acid in fruit drinks, calcium in milk, sulphur dioxide in wine, etc.

Specifications	**Requirements**
Principle of operation	Volume determination by equivalence point and end point.
Instrument details	Microprocessor controlled titration unit (vortex type) andcontrol unit and shall also comprise the following: 10 ml and 20 ml burette with tubing, connector &Teflon coated valve: 2 Nos each Temperature sensor Moisture filter Glass dispensing tip 150 ml. Glass beaker 4 Nos. Stand for mounting all above items Electrode for aqueous titration – pH combination Reagent bottles
	The automatic titrator shall be accompanied with thefollowing accessories: Electrode pH glass body combination Electrode for argentometric / precipitation titration – silver pin combination Electrode for redox titration – Platinum pincombination Electrode for complexometric titration – silver pin combination glass with amalgamation.
Combine functionality	Offered auto titrator must have functionality for determination of pH and for performing aqueous titration,redox titration, argentometric / precipitation titration, complexometric titration and silver assay
mV range	± 2000 mV or higher
Accuracy	± 0.10 mV or better
Polarized sensor range	0 to 3200 mV

Polarized sensor Resolution	0.10 mV or better
Burette resolution	1 µL
Fill and drain time	Burette for Fill and Drain Time : 20 s
Titration head	Manual stand with swiveling arm
Stirrer System	Instrument must have inbuilt magnetic stirrer which preventvortex formation and enables better mixing for fast responseof electrode
End point detection	Potentiometric and voltametric
Cut-off criteria	Volume, pH/mV and endpoint
Special feature	Auto titrator should perform fast, reliable, and reproducible automated titrations. Auto burette recognition It should have a mode for performing automated calibrations program and save at least 100 user defined methods withpassword protection. It should provide flexible pH, redox, and ion concentration titrations. The unit should also have feature of equivalence point titrations, preset pH or mV endpoint titrations. Auto titrator should have minimized downtime with easily replaceable burettes, tubing, and dispensers. Auto titrator should have a feature to leave unattendedinrunning condition until titration is completed. Provision to connect electrode with BNC connector and also for differential electrode.
Memory	Auto titrator should have memory to store at least 100 titration data sets with date/time stamp, transferable to printer, computer, or USB drive.
Display	Minimum 7” touch screen display with LCD graphic display The display should clearly show online graph of titrationtrendand also the status of burette filling & dispensing
Report format	Parameters and results Data table for mV, pH, mV/ml, and volume (µL)Titrationcurve mV v/s µL
Workstation	Computer latest model exclusive for use with PotentiometricAuto titrator to be provided with appropriate licensed software. Laser jet printer to be supplied.
Operating manuals, service manuals, othermanuals	Should provide: - • User, technical and maintenance manuals inEnglishlanguage • List of equipment and procedures required for localcalibration and routine maintenance Service and operation manuals to be provided Advanced maintenance tasks documentation, if any.
Recommendations orWarnings	Any warning signs would be adequately displayed

Calibration certificate	Calibration certificate from ISO17025
Warranty	2-year after satisfactory installation and working excludingconsumable parts and accessories.
After sales service/ Post warranty	Contact details of manufacturer, supplier and local service agent to be provided, including toll free/ Landline Number; Should have a good after sales service/technical support capable of reaching at short notice the places where instrument is installed. Visits and unlimited breakdown calls by service/application support, engineers should attend immediately without fail. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warranty shall be quoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified
Training	The supplier should provide comprehensive training to userson operation of the instrument and application supportonsite as per specifications
List of Spares andAccessories	List of all spares and accessories (including minor) with partnumbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached
	Suitable rechargeable battery/Suitable rating UPS
Quality Requirement	Should be compliant with the requirements of FDA/CE/BISElectrical cabinet conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent BIS Standard) Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety
IQ/PQ/OQ	On site IQ, OQ of instrument along with document to be provided & supplier to assist till satisfactory PQ ofinstrument
Compliance statement	The quote should also include a compliance statement vis- à-vis specifications in a “tabular form” clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with thecompany seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result in disqualification.
Outage conditions	After two years of warranty period, 3 years of CAMC shall beundertaken by the supplier. This would also include: Preventive maintenance service: The seller will providea minimum of two Preventive Maintenance Service visits during a year to the operating base to carry out functional checkups and minor adjustments/tuning as may be required. Breakdown Maintenance Service: In case of any breakdown of the equipment/system, on receiving a call from the buyer, the seller is to provide maintenanceservice to make the equipment/system serviceable.

	Response time: The response time of the sellershould not exceed 48 hours from the time the breakdown intimation is provided by the Buyer. Serviceability of 90% per year is to be ensured. This amounts to total maximum downtime of 37 days per year. Also unserviceability should not exceed 2 working days at one time. Required spares to attain this serviceability may be stored at site by the seller athis own cost. Total down time would be calculated at the end of the year. If downtime exceeds permitted downtime 'Liquidated Damages' would be applicable for the delayed period. Maximum repair turnaround time for equipment/system would be 3 days. However, the spares should be maintained in a serviceable condition to avoid complete breakdown of the equipment/system

26. WATER PURIFICATION SYSTEM

Application: Ultrapure water purification system is required for purification of water and making it free of contaminants that interfere with microbiological analysis. An ultrapure water system is equipped with ultra-filters to remove endotoxins, DNase and RNase left over from bacteria destroyed by UV, resulting in extremely low total organiccarbon (TOC) and having a resistance of up to 18.2 MΩ/cm.

Specifications	**Requirements**
General	Compact, Wall mountable/benchtop system for microbiology / molecular biology/LC-MS/MS grade waterapplications. Should deliver ultra-pure product water by point of use dispenser with flexible dispenser, volumetric dispensing and auto shut off facility.
Quality of water	Should deliver Type I/Ultra– pure as per International specifications as follows: Electrical Resistivity Min. 18.2 MΩ/cm @ 25°C Conductivity 0.055 µS/cm compensated to 25°C TOC level (system with UV lamp) <5ppb Flow rate > 1 lit / min Bacteria <1 CFU/100 ml Particulates(size>0.22µm) <1/mL Sodium (ppb)< 1 Chloride (ppb) < 1 • Total Silica (ppb) < 3 Pyrogens <0.001 Eu/ml RNases free, <1pg/ml DNases free, <5 pg/ml
Storage	System should come with an inbuilt storage system of 5-8 Lto store consistently high-quality pure water for prolongedperiod and prevent Contamination by ambient air.
Feed water	Should have separate feed water (Potable tap water) specific purification cartridge and application specific polishing cartridge

Control display	Should have calibrated meters for continuous monitoring and display of water quality parameters: Product water resistivity / conductivity both compensated and non-compensated mode, product water temperature, Alarms for product water resistivity greater or below set point
	Should have display for maintenance: sanitization/exchange purification cartridges/activation of fast flush/depressurization/ air purge etc.
Consumable	Must Quote separately for consumables (cartridges, filtersetc.) for ONE YEAR for trouble free working.
Validation	For validation vendor should having its own capability withtheir own company trained service engineer to perform validation. No third part validation will be entertained. One validation at the time of installation should be done bycompany personnel.
Operating manuals, service manuals, other manuals	Should provide: - • User, technical and maintenance manuals in English language • List of equipment and procedures required for local calibration and routine maintenance • Service and operation manuals to be provided Advanced maintenancece tasks documentation, if any. 130
Recommendations orWarnings	Any warning signs would be adequately displayed
Warranty	2 years after satisfactory installation and working excluding consumable parts and accessories. Provision should be thereto extend the warranty up to 3 years (at least).
Training	The supplier should provide comprehensive training to users on operation of the instrument and application support onsite as per specifications
Accessories	All cartridges, filters, pump or any such item which is /are essential for Installation and functioning /operating the equipment.
UPS	UPS/Stabilizer as required for functioning of the equipment
Quality Requirement	Should be compliant with the requirements of FDA/CE/BIS Manufacturer and Supplier should have ISO 9001:2015 for Quality Management System & ISO 14000:2015 for Design of process plant, Design, manufacture & technical support of water purificationequipment. Electrical safety conforms to the standards for electrical safety EN 61326-1 EMC requirements Electrical equipment for measurement,control & lab use. EN 61010-1 Safety requirement of electrical equipment for measurement, control & laboratory use.
IQ/PQ/OQ	On site IQ, OQ of instrument along with document to be provided & supplier to assist till satisfactory PQ ofinstrument.

After sales service/ Post warranty	Contact details of manufacturer, supplier and local serviceagent to be provided, including toll free/ Landline Number;Should have a good after sales service/technical support capable of reaching at short notice the places where instrument is installed. Visits and unlimited breakdown callsbyservice/application support, engineers should attend immediately without fail. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warranty shallbequoted. Terms and conditions for the comprehensive AMC,after the warranty period has to be specified
Compliance statement	The quote should also include a compliance statement vis-à- vis specifications in a "tabular form" clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will resultin disqualification.
Outage conditions	After two years of warranty period, 3 years of CAMC shall be undertaken by the supplier. This would also include: Preventive maintenance service: The seller will providea minimum of two Preventive Maintenance Service visits during a year to the operating base to carry out functional checkups and minor adjustments/tuning as may be required. Breakdown Maintenance Service: In case of any breakdown of the equipment/system, on receiving a callfrom the buyer, the seller is to provide maintenance service to make the equipment/system serviceable. Response time: The response time of the seller shouldnot exceed 48 hours from the time the breakdown intimation is provided by the Buyer. Serviceability of 90% per year is to be ensured. This amounts to total maximum downtime of 37 days per year. Also unserviceability should not exceed 2 working days at one time. Required spares to attain this serviceability may be stored at site by the seller at his own cost. Total down time would be calculated at the end of the year. If downtime exceeds permitted downtime 'Liquidated Damages' would be applicable forthe delayed period. Maximum repair turnaround time for equipment/system would be 3 days. However, the spares should be maintained in a serviceable condition to avoid completebreakdown of the equipment/system.

27. BOMB CALORIMETER

Bomb calorimeter is required to calculate the total energy value of the food products

Specifications	**Requirement**

Instrument	Fully Automatic Bomb Calorimeter for rapid determination of Gross Calorific Value of fooditems.
Temperature resolution	0.0001^{0}C or Better
Reproducibility/Repeatability	<0.1% RSD or better
Unit of measurement	CAL and KJ
Memory	1000 test or Higher
Pelletizer	Suitable for pelletizing food samples.
Sample weight	0.5 to 1.0 g, or better
Calories Energy Measurement Range	25 – 10000 Calories or more
Jacket Type	Isoperibol, water jacket
Bomb Type	Removal bomb and bucket type
Bomb standards	Comply with ISI350 / ASTM E144
Network Interface	Suitable interfaces for PC, Printer & Balance withUSB type port.
Oxygen filling	Automatic
Calculation	Provision for correction facilities due to moisture Fibre, spike weight, Ash for further calculation ofGross Calorific Value.
Calibration Standards	Certified values of Certified Reference Materials (CRM)provided by an accredited Reference Material Producer with stated metrological traceability to the SI
Oxygen cylinder	Oxygen Cylinder 2 nos Cylinder regulator with adapter for filling the bomb – 1 no
Accessories	Ignition wire – Additional 10 Nos Cotton thread – 1000 Pcs Combustion crucible – 25 Pcs Bomb – Additional 3 nos NIST certified Benzoic for calibration Any other accessories required for analysis of foodsamples.
Training	The supplier shall provide on – site comprehensivetraining for scientific personnel operating the systemand support services with the system.
Warranty	Minimum 2 years warranty should be provided starting from date of satisfactory and faultless functioning of the equipment at the respective laboratory premises. Comprehensive Maintenance Contract (CMC)Service for 3 years, after expiry of standard Warranty should be quoted. Annual calibration of the equipment shall be apart of the CMC. It shall also be mandatory toperform calibration after every major repair/breakdown.

Operating manuals, servicemanuals, other manuals	Should provide 2 sets (hardcopy and soft-copy) of: User, technical and maintenance manuals tobe supplied in English language along with machine diagrams; List of equipment and procedures required forlocal calibration and routine maintenance; Service and operation manuals (original andcopy) to be provided; Advanced maintenance tasks documentation; Certificate of calibration and inspection
Compliance statement	The quote should also include a compliance statement vis-à-vis specifications in a "tabular form" clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result in disqualification.
Outage conditions	After two years of warranty period, 3 years of CAMCshall be undertaken by the supplier. Thiswould also include: Preventive maintenance service: The seller will provide a minimum of two Preventive Maintenance Service visits during a year to the operating base to carry out functional check-ups and minor adjustments/tuning asmay be required. Breakdown Maintenance Service: In case of any breakdown of the equipment/system, on receiving a call from the buyer, the seller is toprovide maintenance service to make the equipment/system serviceable. Response time: The response time of the seller should not exceed 48 hours from the time the breakdown intimation is provided by the Buyer.
	Serviceability of 90% per year is to be ensured. This amounts to total maximum downtime of 37 days per year. Also unserviceability should not exceed 2 working days at one time. Required spares to attain this serviceability may be stored at site by theseller at his own cost. Total downtime would be calculated at the end of the year. If downtime exceeds permitted downtime 'Liquidated Damages' would be applicable forthe delayed period. Maximum repair turnaround time for equipment/system would be 3 days. However,the spares should be maintained in a serviceable condition to avoid complete breakdown of the equipment/system

28. ROTARY EVAPORATOR

Application: The system would primarily be used for efficient and gentle evaporation ofsolvents under control boiling point applying precise vacuum		
Specifications	**Requirements**	
General	Complete equipment from the same source of manufacturingfor compatibility & integration Single point operation for all set parameters Single point ON/OFF for all attached accessories e.g.Chiller/Vacuum Pump	
Rotary evaporator	Protection class	IP 21
	Condenser SurfaceArea	1400 ~ 1500 cm^2
	Heating Bath control	RT to180□C or more with setand actual temp. display
	Maximum Safety	The glass parts should be Plastic Coated
	Speed	**(20 ~200 RPM) or more.**
	Lift:	Motorized/Electronics
	Default Supply:	With 1 L Receiving andEvaporating Flask
	Display:	RPM, Heating bath temperature, Height movement
	Operating Voltage	100-240V
	Operating Voltage	100-240V
Vacuum pump	Mode	Speed and Valve control
	Observation	Glass window for easymaintenance
	Default mode	Speed control
	Suction Capacity	1.8m^3 /h
	Maximum Numberof Steps (Heads)	2
	Final Vacuum	10 mbar or better.
	Power consumption	180W
	Operating Voltage	100 ~ 240 V 50Hz
	Sound Level	32-57 dBA
Vacuum controller	Display Screen	4'3 LCD Display
	Display Parameters	Heating Bath Temp/RPM/Chiller Temp/Vacuum Options: To fix on rotary evaporator or Vacuum pump
	Protection class	IP 21

	Detection	Automatic detection of Heating Bath Temp
	Library	Common 53 solvent with autodetection of required vacuum
	Facility	Can be used independently if required
Re-circulating chiller	Cooling capacity	550W cooling power @15^{O}C
	Temperature range	-10°C to +25°C
	Voltage	230V, 50/60 Hz
	Temperature Display	Resolution 0.1 C
	Refrigerant	R-134a, CFC free refrigerant
	Temperature regulationaccuracy	+/-2 □C
	Tank volume	3.0-5.0 L
	Flow Rate	2.5-5 L/min or more
Operating manuals, servicemanuals, other manuals	Should provide: - • User, technical and maintenance manuals in Englishlanguage • List of equipment and procedures required for localcalibration and routine maintenance Service and operation manuals to be provided Advanced maintenance tasks documentation, if any.	
Recommendations or Warnings	Any warning signs would be adequately displayed	
Calibration certificate	Calibration certificate from ISO17025 for Temperature andVacuum.	
Warranty	2 years after satisfactory installation and working excludingconsumable parts and accessories.	
After sales service/ Post warranty	Contact details of manufacturer, supplier and local service agent to be provided, including toll free/ Landline Number; Should have a good after sales service/technical support capable of reaching at short notice the places where instrument is installed. Visits and unlimited breakdown callsby service/application support, engineers should attend immediately without fail. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warrantyshall be quoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified	
Training	The supplier should provide comprehensive training to users on operation of the instrument and application support onsiteas per specifications	

List of Spares and Accessories	List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs infuture after guarantee/warranty period should be attached
Battery backup	Suitable rechargeable battery/Suitable rating UPS
Quality Requirement	Should be compliant with the requirements of FDA/CE/BIS Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements(or equivalent BIS Standard) Certified to be compliant with IEC 61010-1, IEC 61010-2-40for safety
IQ/PQ/OQ	On site IQ, OQ of instrument along with document to be provided & supplier to assist till satisfactory PQ of instrument
Compliance statement	The quote should also include a compliance statement vis- à-vis specifications in a "tabular form" clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with thecompany seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result in disqualification.
Outage conditions	After two years of warranty period, 3 years of CAMC shall beundertaken by the supplier. This would also include: Preventive maintenance service: The seller will providea minimum of two Preventive Maintenance Service visits during a year to the operating base to carry out functional checkups and minor adjustments/tuning as may be required. Breakdown Maintenance Service: In case of any breakdown of the equipment/system, on receiving a callfrom the buyer, the seller is to provide maintenance service to make the equipment/system serviceable. Response time: The response time of the sellershould not exceed 48 hours from the time the breakdown intimation is provided by the Buyer.
	Serviceability of 90% per year is to be ensured. This amounts to total maximum downtime of 37 days per year. Also unserviceability should not exceed 2 working days at one time. Required spares to attain this serviceability may be stored at site by the seller at his own cost. Total down time would be calculated at the end of the year. If downtime exceeds permitted downtime 'Liquidated Damages' would be applicable forthe delayed period. Maximum repair turnaround time for equipment/system would be 3 days. However, the spares should be maintained in a serviceable condition to avoid complete breakdown of the equipment/system.

29. ORBITAL SHAKER

Application: Shaking incubators are combination of traditional incubators and a laboratoryshaker used to simultaneously incubate and shake or agitate samples. They are ideal for laboratory working on cell culture, cell aeration and solubility experiments.

Specifications	**Requirements**

Shaker requirements	• Single knob selects all operating conditions and quicklyTriple-eccentric counter balanced drive • Acceleration circuit to prevent sudden start and stopshould be available • Programmable controller offering up to 4 modes oftimer and parameter control for reduced user intervention. • Timer 0.1 to 99.9 hours or continuous mode • UV germicidal lights. • Noiseless operation
Shaking Speed range	25 to 400 rpm with ± 2 rpm accuracy
Temperature range	20°C below ambient to 80°C with accuracy of ± 0.1°C andstability of ±0.2°C at 37°C
Shaking orbit	approx. 25 mm
Display	Large, easy to read LCD display screen
Audible and VisibleAlarm	Should indicate when speed deviates more than 5 rpm or temperature deviates more than 1°C from set point, and whentimer operation has expired.
Overall dimensions	Minimum 62 x 75.4 x 82 cm (W x D x H)
Accessories	1. Universal Platform of at least 40 x 40 cm having capacity to holds assortment of various size of flask sizes up to 2 Ltrs and test tube racks. 2. System should be supplied with 125ml clamps (10Nos.), 250 clamps (5 Nos.), 500 ml clamps (05 Nos.), 1000 ml (02 Nos.) and 2000 ml(01-02Nos) 3. Test tube rack for 20x50ml tube-1 no and test tube rack for 42x15mltubes-1
Operating manuals, service manuals, othermanuals	Should provide: - • User, technical and maintenance manuals in English language • List of equipment and procedures required for localcalibration and routine maintenance • Service and operation manuals to be provided Advanced maintenance tasks documentation, if any.
Recommendations or Warnings	Any warning signs would be adequately displayed
Warranty	2 years after satisfactory installation and working excludingconsumable parts and accessories. Provision should be there to extend the warranty upto 3 years (at least).
Training	Training of personnel After supply, training on instrument operation and troubleshooting etc., to be given to all laboratorypersonnel.
UPS	UPS/Stabilizer as required for functioning of the equipment
Quality Requirement	Should be compliant with the requirements of FDA/CE/BIS • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (orequivalent BIS Standard)
	Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety
IQ/PQ/OQ	IQ/OQ/PQ of instrument and Software should be provided alongwith document

After sales service/Postwarranty	Contact details of manufacturer, supplier and local service agent tobe provided, including toll free/ Landline Number; Should have a good after sales service/technical support capable of reaching at short notice the places where instrument is installed. Visits and unlimited breakdown calls by service/application support, engineers should attend immediatelywithout fail. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warranty shall bequoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified
Compliance statement	The quote should also include a compliance statement vis-à-vis specifications in a "tabular form" clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with the company seal, for itsauthenticity and acceptance that any incorrect or ambiguous information found submitted will result in disqualification.

30. Water Bath Shaker

Volume	12 Liters
Temperature range	Ambient+5°C to 99°C
Temperature controller	Digital PID controller with SV & PV
Temperature sensor	PT100
Heater	Immersion heater
Shaker RPM	40 to 140 strokes
Shaker racks	Stainless steel
RPM display	LED display
RPM controller	Rotary type speed regulator
Motor	Brushless
Flask capacity	• 25 ml x 16 nos. • 50 ml x 12 nos. • 100 ml x 09 nos. • 250 ml x 05 nos. • 500 ml x 04 nos. • 1000 ml x 02 nos.
Stroke length	20 - 25mm
Construction	Double walled & insulated
Inner chamber	SS 304
Exterior	Powder coated GI sheet

Power supply	220 Volts 50 Hz
Standard fittings	Pilot lamp
	Mains on/off switch
	Power cable
	Shaking on/off switch
Optional	Complete SS construction
	Digital RPM controller
	Digital Timer
	Temperature variation alarm
	Lower water alert alarm

31. Auxiliary equipment

I. HOMOGENIZER

Application: A homogenizer is used for the proper mixing and combination of the food sample to obtain a homogenous mixture prior to analysis.

Specifications	**Requirement**
1.	**It should be macerating and homogenizing of a variety of high moisture, high-fat and fibrous samples such as meat, fish, fruit, vegetables, prepared foods frozen meals, etc. Should allow frozen food samples to be homogenized in a short period of time, providing more.**
2.	It should be general Laboratory Homogenizer is a powerful 850-watt homogenizer that was specifically designed to disrupt a wide **range of samples in volumes ranging from 50 ml to 2.0 L.**
3.	It should be compatible with stainless steel generator probes ranging in diameter from 10 mm to 25 mm
4.	It should quickly and efficiently process a wide variety of sample and should be capable of processing even the toughest samples.
5.	It should feature an advanced, integrated, push button digital control system that ensures accuracy and repeatability.
6.	It should have closed loop variable speed controller (5,000 -25,000 rpm) which can maintain selected speeds within +/- 100 rpm of the original set point.
7.	It should be compatible with Plastic Generator Probes for both soft tissue and hard tissue versions to avoid cross contamination between samples.
8.	It should come with approx. 10 m and. 20 mm Probe with Saw Teeth with G-style to process the volume form 1.5 liter to 2 liter

9.	The probes should have fine to medium processing windows for samples to pass through.
10.	The probes should come with stainless steel upper bearing and entire probe shall be easily disassembled for cleaning.
11.	**Standards Approval: CE approved, and ISO certified**

II. BOTTLE-TOP DISPENSER (1 qty of each capacity)

Application: Bottle-top dispensers are used for safe dispensing of different volumes of concentrated acids and corrosive chemicals from a bottle safely and reliably,without contamination from the reagent bottles for use in laboratory

Requirement	**Specification**			
General	For free dispensing of concentrated acids such asHNO_3, HCl, H_2SO_4, and liquid H_2O_2Simple single-hand usage			
Material	Metal-free construction Corrosion resistant components for highconcentrated acids(also HF) Reproducibility for base solutions			
Types of bottle dispenser	Type Analog , variabl e volume	**Comply**	Volume increment (mL)	Accuracyy Full scale
	1-10 mL	**Comply**	0.5 or less	≤ ±0.5%
	10-50 mL	**Comply**	1.0 or less	≤ ±0.5%
	50-100 mL	**Comply**	1.0 or less	≤ ±0.5%
Safety features	Dispenser should have recirculation valve to ensure safetyduring dispensing. The end of the discharge tube should have a hinged cap to avoid dripping after dispensing.			
Working temperature range	Dispensers should be suitable to work in 20-40 □temperature range.			
Calibration certificate	Calibration certificate from ISO 17025 Laboratoryaccording to ISO 8655 standards.			
Accessories	• A calibration tool for in-lab recalibration • Adapters that comfortably fit most laboratoryreagent bottles (28 mm, 32 mm, 38 mm, 40 mm and 45 mm). • Heavy Duty Acid resistant gloves			

Quality Requirement	Should be compliant with the requirements of FDA/CE/BIS • Should provide calibration certificates from NABL accredited agency every year during warranty & CMCperiod. Calibration cost will have to be borne by the supplier.
Warranty	Warranty for 2 years

III. LABORATORY GRINDING MILL

Application: Mills grind by means of a high-speed rotating steel hammers or discs and are equipped with a sieve before the sample leaves the grinding chamber. By selectingdifferent sieves, the particle size can be varied such that homogeneous samples are produced.

Specifications	**Requirements**
General	Cyclone type bench top sample mill (Lab scale).
Grinding speed	Micro switch- based system with high grinding speed (10000 rpm) for the grinding of samples like grains, seeds, cereals,hard boiled confectionery etc.
Grinding principle	Turbine and sieve
Grinding ring	Made of tungsten Carbide/CopperImpeller-standard (aluminum).
Sample volume	Should be able to grind samples with different moisturelevels i.e. from 10% or less to 15%
Sample composition	Should be able to grind samples with up to 15% moistureand/or fat content up to 20
Final particle size	• Should have capability to grind sample size of up to 10 mm or more; • Should have grinding rate of ≥4g/sec • Should have provision for adjustable particle size; Shouldbe supplied with Screen sieves for 0.5 mm, 2 mm, 1 mm, 0.8mm, • 0.3 mm should be provided for defined particle size Thereshould be no/ minimum thermal degradation of the sample during grinding • Should be approved by AOAC for sample preparation for different purpose
Noise level	Low noise level of ≤75 dBA
Accessories	Sample bottles 100 to 125 ml and seal Accessory to enable pouring of samples into the milling zoneDust collection accessories Seal kit Minimum 50 sample bottles (UV protected) with sealing lids
Power requirements	230 V / 50 Hz – 230V/60Hz
Warranty	2 years after satisfactory installation and working excludingconsumable parts and accessories.

IV. Thermo-Hygrometer- 3 nos.	1. The Thermo-hygrometer should measure both humidity and temperarure of the laboratory environment. 2. It should be used for maintaining optimal temperature and humidity inside the lab 3. Temperature range -20 °C to 60 °C 4. Readability 0.1°C 5. Temperature accuracy ± 1.0 °C or better 6. Resolution 0.1°C 7. Temperature update rate 500ms 8. Data storage capacity 99 points 9. R.H Range 5% to 95% R.H ± 2.5 % - % RH readability 10. Display: Backlit dual display of humidity and temperature
VII Gas Flow Meter-1 nos.	1. Operating Flow Range (Positive flow): +0.50 to +500 mL/min (Negative vacuum 2. flow): -0.50 to -500 mL/min 3. Accuracy ± 2% of flow/± 0.05 mL/min Indicator over range warning indicator Operating Temperature Range 32 to 120 °F (0 to 48 °C) 4. Feature auto-shut off Humidity Range 0-97%

32. AUTOMATIC FAT ANALYZER

Application: It is used for analysis of total fat content of food samples. It is based on theSoxhlet extraction principle and all functions as soaking; extraction, leaching, heating, condensation and solvent recovery are automated for safe operation. Several samples
can be analyzed at the same time.

Specification	**Requirement**
Function	The system must be capable of quantitative separation of totalfats from food, feed etc.
Sample Positions	≥ 6
Measuring Range	0.1 – 100 % fat
Sample Volume (Size)	0.5 to 15 gm or more
Accuracy	± 1%
Solvent Recovery	≥75%
Temperature	100°C– 280°C or better
Other Features	• Shall be completely microprocessor based, fully automatic boiling, rinsing, drying, recovery, lifting of thimbles to coolingposition and shut-down • User interface for up gradation of software • Shall be based on official 'RANDALL' method accepted by AOAC; • System must have capability to perform un-attended operation and must be programmable; • Should be provided with suitable solvent recovery system.

Safety Features and alarms	• Automatic door lock and sealing during extraction. • Automatic over- temp. Control/protection facility. • Equivalent or ATEX classified components for internal exposed valves, IP 65 for other internal electronics, IP55 forLiquid and Dust protection, Pressurized electronics cabinet.
Material	All material in contact with solvents should be PTFE or suitablehigh-grade material The material of construction of equipment should be Epoxypainted stainless-steel structure to prevent corrosion or other corrosion free material
Accessories to be supplied	The system should be supplied with at least 12 glass/aluminum extraction cups (preferably ≥ 150 ml.), 24 dozen of suitable cellulose thimbles (preferably 33 Ø x 80mm) or Filter Bags, at least 6 Viton seals, 1 sample tray, 1 boiling stones,1 cup stand and 1 recovery flask
Operating manuals,service manuals, other manuals	Should provide: - • User, technical and maintenance manuals in English language • List of equipment and procedures required for localcalibration and routine maintenance • Service and operation manuals to be provided • Advanced maintenance tasksdocumentation, if any
Recommendations or Warnings	Any warning signs would be adequately displayed
Warranty	2 years after satisfactory installation and working excluding consumable parts and accessories. Provision should be there to extend thewarranty up to 3 years (at least) or CAMC
Training	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on-site comprehensive training for a minimum of two scientific personnel operating the system till customer satisfaction
List of Spares and Accessories	List of all spares and accessories (including minor) with partnumbers and price, required for maintenance and repairs in future afterguarantee/warranty period should be attached
Quality Requirement	Should be compliant with the requirements of FDA/CE/BISElectrical safety conforms to the standards for electrical safety IEC60601- General requirements (or equivalent BISStandard) Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety Should have necessary certification for safety and quality standards from national/ international bodies
IQ/PQ/OQ	On site IQ, OQ of instrument along with document to be provided &supplier to assist till satisfactory PQ of instrument

After sales service/ Post warranty	Contact details of manufacturer, supplier and local service agent tobe provided, including toll free/ Landline Number; Should have a good after sales service/technical support capableof reaching at short notice the places where instrument is installed. Visits and unlimited breakdown calls by service/application support, engineers should attend immediately without fail. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warranty shall be quoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified
Compliance statement	The quote should also include a compliance statement vis-à-vis specifications in a "tabular form" clearly stating the compliance andgiving justification, if any supported by technical literature. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result in disqualification.
Outage conditions	After two years of warranty period, 3 years of CAMC shall beundertaken by the supplier. This would also include: a. Preventive maintenance service: The seller will provide a minimum of two Preventive Maintenance Service visits duringa year to the operating base to carry out functional checkupsand minor adjustments/tuning as may be required. b. Breakdown Maintenance Service: In case of any breakdownof the equipment/system, on receiving a call from the buyer,the seller is to provide maintenance service to make the equipment/system serviceable. c. Response time: The response time of the seller should not exceed 48hours from the time the breakdown intimation is provided by the Buyer. d. Serviceability of 90% per year is to be ensured. This amountsto total maximum downtime of 37 days per year. Also unserviceability should not exceed 2 working days at one time. Required spares to attain this serviceability may be stored at site by the seller at his own cost. Total down time would be calculated at the end of the year. If downtime exceeds permitted downtime 'LiquidatedDamages' would be applicable for the delayed period. e. Maximum repair turnaround time for equipment/systemwould be 3 days. However, the spares should be maintained in a serviceable condition to avoid complete breakdown of theequipment/system.

33. AUTOMATIC FIBRE ANALYZER

Application: It is used for analysis of crude fiber content of food through acidic or alkaline hydrolysis. It eliminates chemical and hot water handling and requires lessbench space.

Specification	**Requirement**
Features	• The system must be closed and microprocessor controlled, capable of performing all operations, extraction, rinsing & filtration of samples for analysis of crude fiber, acid detergent fiber, neutral detergent fiber, etc. • Should have agitate/heat Switch & temperature/timer/clockcontroller for process parameter input and results readout. • System should be based on either crucibles or filter bag technology
Analysis of sample	Should have possibility of analyzing 6/12/24 samples at a time
Sample size	≤ 1 gm
Measuring range	0.1 to 100%
Reproducibility	± 1 % relative at 5 % - 30 % fiber level
Operating manuals, service manuals, other manuals	Should provide: - • User, technical and maintenance manuals in English language • List of equipment and procedures required for local calibrationand routine maintenance • Service and operation manuals to be provided Advanced maintenance tasks documentation, ifany.
Recommendations or Warnings	Any warning signs would be adequately displayed
Warranty	2 years after satisfactory installation and working excludingconsumable parts and accessories. Provision should be there to extend the warranty up to 3 years (at least)
Training	The supplier will have to carry out successful Installation at thelaboratory premises (where ever the system has to be installed) and provide on-site comprehensive training for a minimum of two scientific personnel operating the system till customer satisfaction
Accessories to be supplied	• In case of fiber bag system 1000 filter bags should bequoted along with the system • In case of crucible-based system, the following accessoriesmust be essentially quoted for a. Cold extractor b. 24 Crucibles of P2 porosity c. Crucible stand for 6/12 crucibles d. 2 crucible holders e. 2 nos. each of acid tank, alkali tank, NDS tank,ADS tank • In case of filter bag system, the following accessoriesmust be essentially quoted for

	a. Heat sealer for filter bags; marker acetoneresident block. b. 12 nos. of glass spacer; drip tray; complete fiber bag incineration module along with 12 nos. of quartz crucible; tubing connection set; automaticalpha amylase dosing unit; and 12 place sample carousels. • Should be supplied with Certified Reference Material. Enzymes and all other reagents for 100analysis.
List of Spares and Accessories	List of all spares and accessories (including minor) with partnumbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached
Quality Requirement	Should be compliant with the requirements of FDA/CE/BIS Electrical safety conforms to the standards for electrical safety IEC60601- General requirements (or equivalent BIS Standard)Certified to be compliant with IEC 61010-1, IEC 61010-2-40 forsafety Should have necessary certification for safety and quality standards from national/ international bodies
IQ/PQ/OQ	On site IQ, OQ of instrument along with document to be provided &supplier to assist till satisfactory PQ of instrument
After sales service/ Post warranty	Contact details of manufacturer, supplier and local service agentto be provided, including toll free/ Landline Number; Should have a good after sales service/technical support capable of reaching at short notice the places where instrumentis installed. Visits and unlimited breakdown calls by service/application support, engineers should attend immediately without fail. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warranty shall be quoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified
Compliance statement	The quote should also include a compliance statement vis-à-vis specifications in a "tabular form" clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result in disqualification.
Outage conditions	After two years of warranty period, 3 years of CAMC shallbe undertaken by the supplier. This would also include: a. Preventive maintenance service: The seller will provide a minimum of two Preventive Maintenance Service visits during a year to the operating base to carry out functional checkups and minor adjustments/tuning as may be required. b. Breakdown Maintenance Service: In case of any breakdown of the equipment/system, on receiving a callfrom the buyer, the seller is to provide maintenance service to make the equipment/system serviceable. c. Response time: The response time of the seller shouldnot exceed 48 hours from the time the breakdown intimation is provided by the Buyer. d. Serviceability of 90% per year is to be ensured. This amounts to total maximum downtime of 37 days per year. Also unserviceability should not

	exceed 2 working days at one time. Required spares to attain this serviceability may be stored at site by the seller at his own cost. Total down time would be calculated at the end of the year. If downtime exceeds permitted downtime 'Liquidated Damages' would beapplicable for the delayed period. e. Maximum repair turnaround time for equipment/system would be 3 days. However, the spares should be maintained in a serviceable condition to avoid complete breakdown of the equipment/system

34. AUTOMATIC PROTEIN ANALYSER

Application: Kjeldhal method is used to determine organic nitrogen and protein contents in food samples. Automatic Kjeldhal protein analysers are space saving and have distillation and digestion units combined together

Specification	**Requirement**
Digestion and distillation unit	Should be combined unit with all units from the same manufacturerand consist of 1. Digestion unit 2. Distillation unit 3. Scrubber 4. Auto titrator
Digester	1. Tube holding capacity: ≥ 20 1. Temperature: ambient to 450˚C 2. Temperature Stability: + 1°C 3. Digestion Time range: 1 - 999 minutes 4. Should have programmable time & temperature ramping andaudible alarms. 5. Should be provided with automatic motorized lifting of tubes from the heating unit.
Accessories for digester	1. Exhaust unit, 2. Rack, stand, lid, 3. 40 nos. of digestion tubes ≥ 250 ml. 4. and all other required accessories for standalone operationof the digester
Scrubber system	1. The material of construction of the scrubber should be ofhigh endurance materials like borosilicate glass or high-qualitystainless steel. 2. Cleaning shall include condensation, neutralization, adsorption and redox reactions to maintain efficiency of theequipment 3. Suction should be regulated/adjustable to achieve efficientdigestion. 4. All supplied reagent containers must be ≥ 2 L. capacity andmust be made of high-quality borosilicate glass
Automated Distillation and Titration Unit	1. Should be completely programmable for all controls likecooling water, dilution water, sodium hydroxide, receiver solution, automatic calculation, automatic emptying of tube, titrationvessel, etc. 2. Should have built-in colorimetric titration system and allow use of a wide range of indicators. 3. Should have possibility for bypassing automatic titrationsystem to

	allow manual titration 4. Should have ≥ 7” color touch screen LED/LCD/VFD display 5. Nitrogen measurement range: 0.1 - 200 mg or more 6. Recovery: ≥ 99.5%. 7. Should be provided with burette having ≥ 30 ml volume andmust have possibility of automatic refilling during analysis. 8. Minimum dispensing volume: 2 - 3 µl 9. Reproducibility: ± 1% of RSD 10. Automatic waste removal via tube drainage after distillation 11. The system should be able to store the recorded data and must-have facility for downloading the same using an USB port or through Wi-Fi or connectivity for LIMS 12. Additionally, it should be possible for transferring weightsand retrieving data using suitable software which is compliant to traceability. 13. The system should have safety sensors and audiblewarning systems 14. Should be provided with exchangeable splash head toreduce carry-over effects 15. The system should be provided with suitable password protection to prevent tampering of programs and data. 16. The system must be compliant to ISO 17025:2017 17. The system shall have the possibility to track performance of the system and warns if analysis results changes over time. It is desirable to have component traceability feature inthe system for effective maintenance of the system. 18. The instrument shall be delivered with a Verification Testdocument that certifies that instrument has been performance tested in factory (confirming analysis performance). 19. The systems should be supplied with Kjeltabs (5000 nos.) or equivalent, 4 tanks of ≥ 20 L along with level sensors for each of them
Spares and Accessories	All chemicals and reagents for 200 runs
Reference standard	Certified Ammonium sulfate (100g)
Operating manuals, service manuals, othermanuals	Should provide: - • User, technical and maintenance manuals in English language • List of equipment and procedures required for localcalibration and routine maintenance Service and operation manuals to be provided Advancedmaintenance tasks documentation, if any.
Recommendations or Warnings	Any warning signs would be adequately displayed
Warranty	2 year after satisfactory installation and working excluding consumable parts and accessories. Provision should be there toextend the warranty up to 3 years (at least)

List of Spares and Accessories	List of all spares and accessories (including minor) with partnumbers and price, required for maintenance and repairs in future afterguarantee/warranty period should be attached
Training	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed)and provide on-site comprehensive training for a minimum of two scientific personnel operating the system till customer satisfaction
Quality	Should be compliant with the requirements of FDA/CE/BIS
Requirement	• Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent BIS Standard) • Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety Should have necessary certification for safety and quality standardsfrom national/ international bodies
IQ/PQ/OQ	• On site IQ, OQ of instrument along with document to be provided &supplier to assist till satisfactory PQ of instrument
After sales service/ Post warranty	Contact details of manufacturer, supplier and local service agentto be provided, including toll free/ Landline Number; Should have a good after sales service/technical support capable of reaching at short notice the places where instrument is installed. Visits and unlimited breakdown calls by service/application support,engineers should attend immediately without fail. • Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warranty shallbe quoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified
Compliance statement	The quote should also include a compliance statement vis-à-visspecifications in a "tabular form" clearly stating the compliance and giving justification, if any supported by technical literature.This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result in disqualification.

Outage conditions	After two years of warranty period, 3 years of CAMC shall beundertaken by the supplier. This would also include: a. Preventive maintenance service: The seller will provide aminimum of two Preventive Maintenance Service visits during year to the operating base to carry out functionalcheckups and minor adjustments/tuning as may be required. b. Breakdown Maintenance Service: In case of any breakdownof the equipment/system, on receiving a call from the buyer, the seller is to provide maintenance service to make the equipment/system serviceable. c. Response time: The response time of the seller should not exceed48 hours from the time the breakdown intimation is provided by the Buyer. d. Serviceability of 90% per year is to be ensured. This amountsto total maximum downtime of 37 days per year. Also unserviceability should not exceed 2 working days at one time. Required spares to attain this serviceability may be stored at site by the seller at his own cost. Total down time would be calculated at the end of the year. If downtime exceeds permitted downtime 'Liquidated Damages' would be applicable for the delayed period. Maximum repair turnaround time for equipment/system would be3 days. However, the spares should be maintained in a serviceable condition to avoid complete breakdown of the equipment/system.

35. CENTRIFUGE (REFRIGERATED)

Application: A Multi-functional, general purpose High speed refrigerated bench top centrifuge used for separation of supernatants (liquid portion) from pellets (solid portion)

Specification	Requirement
Base Unit	• Table top centrifuge with maintenance free brushless motor and have low access height • CFC free refrigerant • LCD Digital Display of time, speed and Temperature andrun conditions • Compatible with all fixed angle and swinging bucket rotors • Automatic rotor recognition facility • Automatic imbalance detection and cut-off • Should be programmable with easy preset programs for fast temperature for pre-cooling and short spin. • Should have motorized lid lock system
Temperatur eRange	0 ºC to 30 ºC
Speed	Maximum speed: 20000 RPM (with no load

Rotors	• **Fixed Angle Rotor** for
	  • 50 ml bottles
	  • 15 ml Falcon tube
	  • 1.5-2.0 mL Eppendorf tubes and adaptors for 0.2- and0.5-mL tubes/ Eppendorf
	• **Rotor for 2.0 mL** Eppendorf tubes (12 places or better) with RPM20000
	• **Deep-well micro plates rotor** Two 96 well plates for swingout type with RPM 3500
	• **Swing out rotor:**

Accessories	Bottles, falcon tubes, adapters etc. One set of Other items (rotors/adapters) required for improving the applicability/system performance should to be quoted as optional
Power Requiremen t	220 v to 240 v -50 Hz If a voltage stabilizer is required, it shouldbe supplied along with the unit
Voltage stabilizer	Suitable voltage stabilizer to be provided
Certificates Performance andSafety Standards	Should have necessary certification for safety and quality standards from national/ international bodies Optimum safety according to national and international regulations(IEC 1010
Supplier/ Manufacturer	Must be ISO and CE certified for quality

Operating manuals, service manuals, other manuals	Should provide: - • User, technical and maintenance manuals in English language • List of equipment and procedures required for local calibration and routine maintenance • Service and operation manuals to be provided • Advanced maintenance tasks documentation, if any.
Recommendations or Warnings	Any warning signs should be adequately displayed
Warranty	Warranted for 2 years, extendable up to 3 years, after satisfactory installation and working excluding consumable parts and accessories.
Training	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed)and provide on-site comprehensive training for a minimum of two scientific personnel operating the system till customer satisfaction
List of Spares andAccessories	List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future afterguarantee/warranty period should be attached
Quality Requirement	• Should be in compliance with the requirements of FDA/CE/BIS. • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent BIS Standard) • Certified to be compliant with IEC 61010-1, IEC 61010-2-40for safety Should have necessary certification for safety and quality standards from national/ international bodies
IQ/PQ/OQ	• On site IQ, OQ of instrument along with document to be provided &supplier to assist till satisfactory PQ of instrument
After sales service/Post warranty	Contact details of manufacturer, supplier and local service agentto be provided, including toll free/ Landline Number; Should have a good after sales service/technical support capableof reaching at short notice the places where instrument is installed. Visits and unlimited breakdown calls by service/application support, engineers should attend immediatelywithout fail. Should carry out yearly PM with at least one PM kit • Comprehensive AMC cost/rate for 3 years after warranty shall be quoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified
Compliance statement	The quote should also include a compliance statement vis-à-vis specifications in a “tabular form” clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result in disqualification.

Outage conditions	After two years of warranty period, 3 years of CAMC shall be undertaken by the supplier. This would also include: a. Preventive maintenance service: The seller will provide a minimum of two Preventive Maintenance Service visits during year to the operating base to carry out functional checkups and minor adjustments/tuning as may be required. b. Breakdown Maintenance Service: In case of any breakdown of the equipment/system, on receiving a call from the buyer, the seller is to provide maintenance service to make the equipment/system serviceable. c. Response time: The response time of the seller should not exceed48 hours from the time the breakdown intimation is provided by the Buyer. Serviceability of 90% per year is to be ensured. This amounts to total maximum downtime of 37 days per year. Also unserviceability should not exceed 2 working days at one time. Required spares to attain this serviceability may bestored at site by the seller at his own cost. Total down time would be calculated at the end of the year. If downtime exceeds permitted downtime 'Liquidated Damages' would beapplicable for the delayed period. e. Maximum repair turnaround time for equipment/system would be 3 days. However, the spares should be maintained in a serviceable condition to avoid complete breakdown of theequipment/system

36. MICROWAVE DIGESTION SYSTEM

Application: Microwave digestion is a common technique used for elemental analysis. Itis used to digest the food samples for their quantification using instruments like ICP-MS.

Requirement	**Specification**
General	The instrument should have a superior pressure venting whichis not temperature dependent so as to prevent any loss of volatilemetals and should have homogeneous microwave field to avoid sample burning
System	Microwave digestion system should have temperature andpressure control mechanism. The system should be software controlled. Different types of rotors available for the digestion of the different type samplesshould also be quoted. Necessary consumables and maintenance parts should also be quoted to run instrument trouble free

Instrument Design	The system should be a standalone work station and should have • The System should have the feature of simply choose a method and it automatically recognizes the vessel type, counts the vessels and determines all of the parameters necessary for a fast, complete digestion • Should have provision that user can set the desiredparameters for digestion • Should have Automatic Microwave power application depending on the load • Auto sensing of temperature and pressure inside thevessel • Be capable of processing different amounts of samples (from 0.3 gup to 2 g per vessel/) in the same run assuringthe same conditions of temperature and pressure
Display	The Instrument should have the high-resolution, colour touchscreen, acid resistant, LED/LCD screen should serve as controller and display Should provide training videos for sample preparation vessel assembly, system use, and maintenance Should have Data management – Easy access to storedmethods, real-time data and results of past runs Should be able to display the detailed methods, graphs oftemperature and power against time and temperature of individual vessels.
Interlocks	The system should have good interlocking system for safetyand cavity door.
Rotor & Vessel Assembly	High pressure and high temperature rotor with at least 12-20 PTFE vessels, work station & torque wrench. Vessels on the rotor should be segmented for easy use. Maximum Temperature capacity of vessel up to 300 □C Pressure capacity of vessel up to 100 bar(1500 psi) or more Vessel volume: offered vessels should be able to handlevolumes as minimum as 3 ml, 10 ml, 15 ml & 25ml Vessel Material- PTFE-TFM Every vessel must have a vent-and-reseal spring to safelyrelease the pressure in case of overpressure. Burst-disk membrane or self-releasing / continuous venting device are not suitable due to very low performance. Additional twelve numbers of vessels (of both sizes) as specified above should be supplied along with the system
Magnetron	Single/ Dual Magnetron system with rotating microwave diffuser for homogenous microwave power distribution in thecavity. Microwave frequency should be 2450MHz and installed power should be between 1400-1900W and should provide the temperature needed (300 °C) for difficult samples.
Microwave Cavity	The cavity should be made of non-magnetic Rugged high- grade 316 solid steel cavity/ stainless-steel housing with PTFE plasma coating applied at 350 □C for corrosion resistance. Also, all hardware should have 5-layer protective coating for the resistance from acid, alkali and corrosivegases. The Cavity should be constructed with the vessel assembly during a run

	should be visible fromoutside
Hardware & Safety	a. Instrument should have adequate safety coatings onhousing to prevent any corrosion in the cavity. Additional multiple ports on the side walls of the microwave cavity b. Protected against acids and solvents with polymercoating on both inner and outer surfaces c. Self-resealing pressure responsive and explosionresistant door to ensure d. maximum safety even in case of overpressure release ***e.*** Door completely made of 18/8 stainless steelwith ***glass window.*** f. Independent door safety interlocks to prevent microwave emission g. Built-in exhaust system located above the microwave cavity and separated from theelectronics to prevent corrosion h. Magnetron protection from reflected microwave power Continuous and PID-controlled microwave emission at all power levels
Sensors	1. Temp sensor should be integrated in the system for monitoring & controlling each vessel and cavity temp. Temperature of each vessel should be displayed 2. The software should automatically reduce the microwave power in case of over temperature avoidingsample loss Automatic Pressure control: should have a pressure sensor which has a total capability of upto 500psi automatically control the pressure. It should be possible to remove the a) pressure device at a high pressure. The Vessels should act as self-regulators of pressure
Control: User interface	Software must allow the user to edit, save and run multistep unlimited number of methods (minimum 2000) with at least 20GB on board / built in memory for storage of data The software must control all parameter online and display temperature, time and power directly on the terminal/computer. The control terminal should have high resolution LED/LCD Acid Resistant display (minimum 18 cm (7 inch)). Touch screen Should haveprovision for manual programming storage apart from pre-installed program • Continuous display of temperature and power inside the reaction vessels is required
Output	1. One (1) parallel for external printer (HP Deskjet series) 2. Minimum two RS-232 serial ports for connecting PCbalance and service check

Computing	PC with most recent processor), 22" Full HD LEDMonitor, Laser Printer dual side printing
Certificates Performance and safety standards (specific to the device type); Local and/or international	Should be compliant with the requirements of FDA/CE/BISElectrical safety conforms to the standards for electrical safety IEC60601-General requirements (or equivalent BISStandard) Certified to be compliant EN 61326, EN 61000 GLP-validated software for controlling the system
Supplier/ Manufacturer	Must be ISO certified for quality
Operating manuals, service manuals, other manuals	Should provide • Hard copy of User, technical and maintenance manualsin English language and. should be available on the system also • List of equipment and procedures required for local calibration and routine maintenance Service and operation manuals to be provided Advanced maintenance tasks documentation, if any.
Recommendations or Warnings	Any warning signs should be adequately displayed
Warranty	Warranty for 2 years, extendable up to 3 years, after satisfactory installation and working excluding consumableparts and accessories.
Service Support	Contact details of manufacturer, supplier and local serviceagent to be provided, including toll free/ Landline Number; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer
Training	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on-site comprehensive training for a minimum of two scientific personnel operating the system till customer satisfaction
IQ/PQ/OQ	On site IQ, OQ of instrument along with document to be provided& supplier to assist till satisfactory PQ of instrument
After sales service/ Post warranty	1. Contact details of manufacturer, supplier and localservice agent to be provided, including toll free/ Landline Number; 2. Should have a good after sales service/technical support capable of reaching at short notice the placeswhere instrument is installed. Visits and unlimited breakdown calls by service/application support, engineers should attend immediately without fail. 3. Should carry out yearly PM with at least one PM kit 4. Comprehensive AMC cost/rate for 3 years after warranty shall be quoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified. 5. Should provide calibration certificates from NABL accredited

	agency every year during warranty & CMC period. Calibration cost will have to be borne by the supplier.
Compliance statement	The quote should also include a compliance statement vis-à-vis specifications in a "tabular form" clearly stating the compliance and giving justification, if any supported by technicalliterature.
	2. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result indisqualification.
Outage conditions	After two years of warranty period, 3 years of CAMCshall be undertaken by the supplier. This would also include: a. Preventive maintenance service: The seller will provide a minimum of two Preventive MaintenanceService visits during a year to the operating base tocarry out functional checkups and minor adjustments/tuning as may be required. b. Breakdown Maintenance Service: In case of any breakdown of the equipment/system, on receiving a call from the buyer, the seller is to provide maintenance service to make the equipment/systemserviceable. c. Response time: The response time of the seller shouldnot exceed48 hours from the time the breakdown intimation is provided by the Buyer. d. Serviceability of 90% per year is to be ensured. This amounts to total maximum downtime of 37 days per year. Also unserviceability should not exceed 2 working days at one time. Required spares to attain this serviceability may be stored at site by the seller at his own cost. Total down time would be calculated at the endof the year. If downtime exceeds permitted downtime 'Liquidated Damages' would be applicable for the delayed period. e. Maximum repair turnaround time for equipment/systemwould be 3 days. However, the spares should be maintained in a serviceable condition to avoid complete breakdown ofthe equipment/system

37. GLASSWARE WASHER/DRYER

Application: Glassware washer and dryer is an automated equipment designed to wash and dry laboratory glassware such as beakers, flasks, and test tubes.

Specifications	**Requirements**

Chamber volume of Washer/Dryer	Option 1: 150 – 200 L capacity
Internal chamber type	Inner chamber, washing arms and tank filters made of high quality AISI 316 stainless steels. Spray armsmade of AISI 316 stainless steel (DIN 1.4404)
Front Glass Door	Glass Door version – Inside chamber must be visible, whilein washing/drying run.
Control System	Soft touch LCD display. Microprocessor controlled.
Cleaning Liquid Dispenser	• Minimum two automatic internal liquid dispenser • Standard pre-programmed cycle • At least 10 pre-programmed standard cycles.
Internal wash temperature control	Fully adjustable wash temp. up to 90 □ C
Circulation pump	For Option 1: 150 — 200 L capacity: Should have heavy washing pump feeding washing chamber spray arms and wash cart direct injection circuit: 550W power (290 L/min)
Steam condenser	Should have Standard steam condenser which preventsvapors from entering into the washing area
External tap water filteringsystem	Must include all external tap water filtering system, preferably from local supplier
Internal Baskets for placement of glassware inside	Must include basic 3 or 4 multipurpose baskets for storingtest tubes, beakers, conical flasks, round bottom flasks, pipettes and petri dishes.
Built in Dryer Unit	Built in forced air dryer unit for drying entire glassware content after the wash/rinse cycle.
Consumables required for washing/ drying cycle	• Must provide all necessary washing chemicals for 100wash run cycle. • All quality washing chemicals must be easily availablein Indian market at reasonable price (Indian Rupees). • Imported washing chemicals/ consumables are discouraged.
Installation and Commissioning	The vendor must carry out the installation and commissioning at site, including the installation of tap waterfilter system. The tap water inlet and drain will be provided at site.
End User Training at site	Necessary end user training and instructions must be provided to all users at site.
List of present users in India	Must provide the list of users/ customers of thisequipment in India.
Desirable Specification:	• Telescopic bearing railing for loading the basket. • Operator and Service manual with all spare parts list.
Operating manuals, service manuals, other manuals	Should provide: - • User, technical and maintenance manuals inEnglish language • List of equipment and procedures required forlocal calibration and routine maintenance Service and operation manuals to be provided Advanced

	maintenance tasks documentation, if any.
Recommendations orWarnings	Any warning signs would be adequately displayed
Warranty	2 years after satisfactory installation and working excluding consumable parts and accessories. Provision should be there to extend the warranty up to 3 years (at least).
After sales service/Pos twarranty	1. Contact details of manufacturer, supplier and localservice agent to be provided, including toll free/ Landline Number; 2. Should have a good after sales service/technical support capable of reaching at short notice the places where instrument is installed. Visits and unlimited breakdown calls by service/application support, engineers should attend immediately without fail. 3. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warrantyshall be quoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified
Training	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has tobe installed) and provide on-site comprehensive training for a • Minimum of two scientific personnel operating the system till customer satisfaction.
List of Spares andAccessories	List of all spares and accessories with part numbers
Quality Requirement	• Should be in compliance with the requirementof FDA/CE/BIS • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements(or equivalent BIS Standard) Certified to be compliant with IEC 61010-1, IEC61010-2-40 for safety
IQ/PQ/OQ	• On site IQ, OQ of instrument along with document to be provided & supplier to assist till satisfactory PQ ofinstrument
Compliance statement	The quote should also include a compliance statement vis- à- vis specifications in a “tabular form” clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result in disqualification.
Outage conditions	After two years of warranty period, 3 years of CAMC shallbe

	undertaken by the supplier. This would also include: a. Preventive maintenance service: The seller will provide a minimum of two Preventive Maintenance Service visits during a year to the operating base tocarry out functional checkups and minor adjustments/tuning as may be required. b. Breakdown Maintenance Service: In case of any breakdown of the equipment/system, on receiving a call from the buyer, the seller is to provide maintenance service to make the equipment/systemserviceable. c. Response time: The response time of the sellershould not exceed 48 hours from the time the breakdown intimation is provided by the Buyer. d. Serviceability of 90% per year is to be ensured. This amounts to total maximum downtime of 37 days per year. Also unserviceability should not exceed 2 working days at one time. Required spares to attain this serviceability may be stored at site by the seller athis own cost. Total down time would be calculated at the end of the year. If downtime exceeds permitted downtime 'Liquidated Damages' would be applicable for the delayed period. e. Maximum repair turnaround time for equipment/system woul be 3 days. However, thespares should be maintained in a serviceable condition to avoid complete breakdown of the equipment/system.

38. Mobile Filtration Assembly/Unit	
1.	All-Glass Filter Holder with borosilicate glass funnel and base, anodized aluminum spring clamp, silicone stopper, coarse-frit glass filter support and PTFE-faced funnel and base for 47 mm disc filters
2.	Stainless Steel Vacuum Filter Holders analytical Filter Holders For 47-mm disc filter.
3.	Filtering Flasks Side arm connects to vacuum source with 3/8in. I.D. hose. 1 L flasks accept no. 8 perforated stopper. mL flask accepts no. 5 stopper.
4.	• Filter Forceps Highly polished stainless- steel forceps blades with beveled, un-serrated tips to prevent damaging the membrane filter. • packs of Membrane Filters - 47mm for Aqueous solvents, Hydrophobic solvents shall be provided
5.	Suitable vacuum pump should be provided.

39. UV-VISIBLE SPECTROPHOTOMETER

Application UV-VIS spectrophotometer is the workhorse of the laboratory used in spectrophotometric and colorimetric analysis of analytes, food colors, enzyme assay, hydroxymethyl furfural, coloring and bitter principles of saffron etc.

Specifications	Requirement
System	A fully automated PC Controlled spectrophotometer withdouble beam optics with pre-programmed applications using conventional quartz / glass cuvettes with all therequired accessories.
Operation keys	1. Instrument should operate immediately after switchon with no warming up time 2. Should be automatically programmed with from PCkeyboard 3. Capable to store method with analysis:> 100 method programs on the instrument or PC > 1000 results with data, evaluation results and used parameters
Optical Design	• Double Beam with sample and reference cuvettepositions; Czerny-Turner equivalent Monochromatic /Holographic OR equivalent grating withsealed optics • Reference Compartment Should accommodate Cells up to 10 mm path length as standard feature
Light Source	(1) Halogen lamp for Visible range (2) Deuterium Lamp for UV range, light source shouldbe automatically selected as per wavelength required.
Detector	Silicon Photodiode dual detector/PMT
Scan Ordinate Modes	Absorbance, % Transmittance, % Reflectance
Resolution	0.1nm or better.
Wavelength Range	185 –1100 nm
Wavelength Accuracy	± 0.3nm or better for entire range
Wavelength Repeatability	± 0.1nm or better
Scanning Speed	Selectable Variable wavelength scan rate10nm/min to2500 nm/min or
Spectral Bandwidth	Variable (0.2/0.5/1/2/4 or 5) nm
Photometric Range	Absorbance = -3.0 to 3.0 Abs or better.
Photometric Accuracy	With Neutral Glass filter @ 546nm : ± 0.003A
Stray Light	Max. 0.05% (220 nm NaI) or better, Max. 0.05% (340,370nm NaNO2) or better Max. 1% (198 nm KCI)or better.
Noise	0.00005 Abs RMS (500nm) or better
Drift	< 0.0005 A/hr (500 nm, 1-hour warm-up)
Baseline flatness	± 0.0005 Abs or better

Application Software	Compatible Software should be user friendly & simple for data handling with feature like easy to use report publisher, online help and answer wizard, GLP & audit trail and fully compatible with Windows. System built in features such as real time display of concentration, time scan, photometric mode, single/multi- wavelength, capability for event recording (e.g., addition of reagents) Software should have built in a. Methods: • Absorbance with one or more wavelengths, • Scans, Nucleic acids, Proteins, OD 600, • Evaluation: via factor, standard and calibration curve • Dual wavelength with subtraction and division evaluation b. Method dependent evaluation: • Absorbance, concentration via factor and standard • Concentration via standard series using Linear regression, Nonlinear regression with 2nd and 3rddegree polynomials • Spline analysis, • Linear interpolation (point to point evaluation) • Absorbance allocation via subtraction anddivision • Ratio 260/280, 260/230, Molar concentration and total yield for nucleic acids. The software should be 21CFR part 11 compliant.
Accessories and spares	• One pair each of of 0.5, 1 and 3-ml quartz cuvettes10mm path length
	• One pair each of of 0.5, 1, and 3 ml glass cuvettes10mm path length • Cuvette holder • Deuterium Lamp • Halogen lamp • Suitable Certified Standards for Validation including Holmium oxide glass filters for wavelength calibration & NIST traceable NISTtraceable NIST traceable Potassium dichromate
Computer and printer	Latest configuration factory set branded PC system with22-23'' Full HD Monitor with printer –B/W — duplex- laser- • legal, A4 - 1200dpi-up to 21 ppm –capacity with network Card
Calibration	Certificate from an ISO 17025 accredited lab spectral calibration. Wavelength check and absorbance check forthe calibration of equipment should be performed
Compliance	IQ/OQ/PQ of instrument and Software should beprovided along with document
Operation and training component	The supplier will have to carry out successful Installationat the laboratory premises (where ever the system has to be installed) and provide on — site comprehensive training for a minimum of two scientific personnel operating the system till customer satisfaction
Certificates	• Should be FDA/CE/BIS approved product. Electrical safety

Performance and safety standards (specific to the device type);Local and/or international	conforms to the standards for electricalsafety IEC 60601-General requirements (or equivalent BIS Standard)
Quality requirement	Should be compliant with the requirements of FDA/CE/BIS • Certified to be compliant with IEC 61010-1, IEC61010-2-40for safety
Supplier/ Manufacturer	Must be ISO certified for quality
Recommendations or warnings	Any warning signs would be adequately displayed
Warranty	Warranted for 3 years after satisfactory installation andworking excluding consumable parts and accessories.
Service contract clauses, includingprices	List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should beattached;
Operating manuals, service manuals, other manuals	Should provide 2 sets (hardcopy and soft-copy) of:- • User, technical and maintenance manuals to be supplied in English language along with machine diagrams; • List of equipment and procedures required for Local calibration and routine maintenance; • Service and operation manuals (original and copy) tobe provided; • Advanced maintenance tasks documentation, if any.;Certificate of calibration and inspection
After sales service/ Post warranty	Contact details of manufacturer, supplier and local service agent to be provided, including toll free/ LandlineNumber; Should have a good after sales service/technical support capable of reaching at short notice the places where instrument is installed. Visits and unlimited breakdown calls by service/application support, engineers should attend immediately without fail. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warrantyshall be quoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified
Compliance statement	The quote should also include a compliance statement vis-à-vis specifications in a “tabular form” clearly stating the compliance and giving justification, if any supportedby technical literature. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous informationfound submitted will result in disqualification.
Outage conditions	After two years of warranty period, 3 years of CAMC shallbe undertaken by the supplier. This would also include: a. Preventive maintenance service: The seller will provide minimum of two Preventive Maintenance Service visits during

	a year to the operating base tocarry out functional checkups and minor adjustments/tuning as may be required. b. Breakdown Maintenance Service: In case of any breakdown of the equipment/system, on receiving a call from the buyer, the seller is to provide maintenance service to make the equipment/systemserviceable. c. Response time: The response time of the sellershould not exceed 48 hours from the time the breakdown intimation is provided by the Buyer. d. Serviceability of 90% per year is to be ensured. Thisamounts to total maximum downtime of 37 days per year. Also unserviceability should not exceed 2 working days at one time. Required spares to attain this serviceability may be stored at site by the seller at his own cost. Total down time would be calculated at the end of the year. If downtime exceeds permitted downtime 'Liquidated Damages' would be applicable for the delayed period. e. Maximum repair turnaround time for equipment/system would be 3 days. However, thespares should be maintained in a serviceable condition to avoid complete breakdown of the equipment/system

40. AUTOMATED SOLID PHASE EXTRACTION SYSTEM

Application: The Solid Phase Extraction (SPE) performs automated rugged and reliable extraction and clean-up of large volume liquid samples for further analysis by LC-MS/MS, GC-MS/MS with positive pressure loading and elution of sample and solvents with parallel evaporation. Provides a high through put system for processing samples simultaneously

Specifications	**Requirements**
General	**It should be configured as module on x-y movement headline/rail/platform of Main Unit. Automated Solid Phase Extraction module should to carry out automated SPE steps: cartridge condition, sample loading, cartridge drying, and elution, elute evaporation and concentrating, reconstitutions and solvent exchange.**

SPE cartridge station	**The SPE process should be performed in a highly reproducible and reliable manner:** **It should have** **1. Positive liquid displacement** **2. SPE cartridges station for 1, 2, 3and 6ml** **3. 1-3 ml and 6 ml SPE cartridge tray with more than 25position** **4. Tray holder for more than 3 sample trays of various size SPE cartridges** **5. Gripper for plastic transport adaptors** **6. Preparation syringes modules and 2.0 to 2.45 mlsyringes 2 numbers** **7. Supplied with more than 20 cartridges of 6 ml with adaptors** **8. Solvent reservoirs 4 numbers of 1 L solvent bottles** **9. Solvent filling station for four solvent positions of 1 L solvent reservoirs of each and two waste position** **10. Sample vials of 2 ml, 4 ml and 10 ml** **11. Elution collection vials 2 ml, 4 ml and 10 ml** **12. SPE cartridge drying for complete solvent change** **13. Evaporative concentration of the eluate, with or without adding keeper solvent**
Solvent Evaporation module	**It should be configured as module on x-y movement headline/rail/platform of Main Unit.** **It must be multi-position evaporation station to performs solvent evaporation and sample concentration.** **Samples in standard vials can be evaporated /concentrated Controlled evaporation through user defined** **1. temperature (ambient to 100°C),** **2. agitation (from 300 to 700 rpm) and** **3. defined vacuum (up to 60 mbar) levels with vacuum pump** **and condense enabling to flexible operation. Evaporation simultaneous 6 samples or more** **Evaporation vial / tube capacity 10 ml vial (8ml volume), 4ml vial (3ml volume), 2 ml vial (1.2 ml volume)**
Software	**System license software to control and programming all function and device/module under one software.** **Software should be able to operate independently and should able to control and functions.** **Software should have sample preparation Builder function for Solid Phase Extraction, Washing, Evaporation Software should have built-in maintenance function,** **simplifying maintenance planning and improving the overall operation**
Data processor	**Windows based workstation with latest configuration: Monitor-20" or large display LCD based monitor with 4K- UHD resolution for software installation and instrument operation, data storage and analysis** **Should be along with latest licensed Window OS and other necessary software.**

Accessories	**Syringes 1000 µl compatible to system 5 no Syringes 10 ml compatible to system 5 nos Tray for 50 vials of 2ml 3 nos** **Sample Tray for 60 vials of 10 ml and 20 ml or 30 ml each 3nos** **QuECheRS Cartridges for Food** • **Matrices with high fat (500 No.)** • **Matrices with high Water content and (500 No.)** • **Matrices with high pigmented (500 No.)** **Tubing, adaptors, frits, joints, and any replaceable item for operation of system 5 sets**
Power requirements	**230 V / 50 Hz – 230V/60Hz**
Operating manuals, service manuals, other manuals	**Should provide: -** **• User, technical and maintenance manuals in English language** **• List of equipment and procedures required for local calibration and routine maintenance** **• Service and operation manuals to be provided Advanced Maintenance tasks documentation, if any.**
Recommendations or Warnings	**Any warning signs would be adequately displayed**
Performance certificate	**From at least two institution where same model has been installed in the previous 2 years**
Warranty	**2 years after satisfactory installation and working excluding consumable parts and accessories.**
After sales service/ Post warranty	**Contact details of manufacturer, supplier and local service agent to be provided, including toll free/ Landline Number; Should have a good after sales service/technical support capable of reaching at short notice the places where instruments installed. Visits and unlimited breakdown calls by service/application support, engineers should attend immediately without fail.** **Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warranty shall be quoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified**
Training	**The supplier should provide comprehensive training to users on operation of the instrument and application support onsite as per specifications**
List of Spares and Accessories	**List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached**
UPS	**Suitable rating UPS (60 min back-up)**
Quality Requirement	**Should be compliant with the requirements of FDA/CE/BIS Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent BIS Standard)** **Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety**

IQ/PQ/OQ	**On site IQ, OQ of instrument along with document to be provided & supplier to assist till satisfactory PQ of instrument.**
Compliance statement	**The quote should also include a compliance statement vis- à-vis specifications in a "tabular form" clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result in disqualification.**
Outage conditions	**After two years of warranty period, 3 years of CAMC shall be undertaken by the supplier. This would also include:** **a. Preventive maintenance service: The seller will provide a minimum of two Preventive Maintenance Service visits during a year to the operating base to carry out functional checkups and minor adjustments/tuning as may be required.** **b. Breakdown Maintenance Service: In case of any breakdown of the equipment/system, on receiving a call from the buyer, the seller is to provide maintenance service to make the equipment/system serviceable.** **c. Response time: The response time of the seller should not exceed 48 hours from the time the breakdown intimation is provided by the Buyer.** **d. Serviceability of 90% per year is to be ensured. This amounts to total maximum downtime of 37 days per year. Also, unserviceability should not exceed 2 working days at one time. Required spares to attain this serviceability may be stored at site by the seller at his own cost. Total down time would be calculated at the end of the year. If downtime exceeds permitted downtime 'Liquidated Damages' would be applicable for the delayed period.** **e. Maximum repair turnaround time for equipment/system would be 3 days. However, the spares should be maintained in a serviceable condition to avoid complete breakdown of the equipment/system.**

41. ATOMIC ABSORPTION SPECTROPHOTMETER

Application: Atomic Absorption Spectroscopy (AAS) is used for quantitative and qualitative analysis of various metals in variety of food and water samples at the pictogram level. It measures the amount of particular wavelength of light absorbed by the element to promote electrons from one energy level to another, higher, energy level. It typically consists of a 'light source' which emits specific wavelengths of light that are ideally only absorbable by theanalyte; an 'atom cell or atomizer' which convert the samples into gaseous atoms; a 'detection system' that serves to isolate and quantify the wavelengths of interest and a computer system to control instrument operation and collect and process data.

Specification	**Requirement**
General	Atomic Absorption Spectrophotometer (GTA/FLAME/VGA), Computer Controlled with built-in flame emission mode, Unit for Flame (Air Acetylene and nitrous oxide- acetylene), GraphiteTube Atomizer (GTA), Chiller / Water circulating unit, with dedicated Auto samplers for GTA and Flame with 100 or more vial positions.
Wavelengthrange	185-900 nm or better
Sensitivity	At least 0.9 A for 5µg/ml aqueous copper standard solution with air — acetylene flame
Optics	• Dual Beam dual-blazed / holographic Czernyturner Monochromator or equivalent • Focal length: at least 250 mm focal length • Resolution: 1800 lines / mm • Width: Automatic bandwidth of 0.2 to 1.0 nm
Flame Atomizer	• All coded titanium or equivalent burner with impact bead /Flow spoiler, premix Design • Movement: Permanently aligned or Automaticmovement into the sample compartment • Affect from Acids /Organic solvent: Unaffected from attacks by acid solution or organic solvents • Flame Alignment in liquid beam Fully automatic, optimized with motorized burner mount for vertical and/or horizontalburner adjustment
Nebulizer	High precision able to provide manually adjustable uptakerates material of the nebulizer and related Venturi should be inert to acid solutions and organic solvents.
Flame and Gas Controls	Flame Control: Fully Computer controlled ignition/3 stage safety control ignition. Gas Control: Fully Computer controlled with oxidant and fuel gases monitoring to monitor constant fuel / oxidant ration ignition Safety Function Interlocking system to prevent ignition Essential Interlock Monitor Burner type as well as its

	presence in position, air selector, flame sensor, liquid trap level, gas supply pressure and air supply anywhere in the network of gas tubing in the system. Automatic Lamp Selection Function Computer controlled Hollow Cathode Lamp selection and alignment
Lamp Holder	At least 8 lamp holders with built in power supplies for Hollow Cathode lamps/ Boosted Hollow Cathode lamps/ Super Lamps/ Ultra Lamps and Electrode — less discharge lamps or equivalent, integrated RFID tool or provision for Lamps recognition, Time of operation, Operation Current etc.
Auto samplers	Dedicated & Permanently aligned Auto sampler for GTA, Dedicated Auto sampler for Flame and VGA Units with 100 or more vial positions each. Should have Sample rack for vials & supplied with two sets of sample vials
Operating Parameter setting	Automatic Setting
Read Out /Display	For absorbance as well as concentration, Display of errors or error codes, absorbance range at least up to 2.0 Abs.
Scale Expansion	Scale expansion at least up to 100x
Integration time	Integration time should cover at least 3 to 50 seconds range
Measurement	Measurements of mean, RSD and CV, Background onlymode, Integration of peak height and peak areas
Accessories/Spares	All accessories with Flame AA System
Vapour Generation Assembly:	Should be continuous flow-based hydride / mercury vapour generator to be used with a programmable auto sampler
Precision	Better than or at least 1% at ppb levels of mercury, arsenic etc.
Mercury amalgamation	Mercury amalgamation unit
Absorption Cell	The absorption cell's material should have no effect of the high heat of the flame and the cell for the analysis ofmercury should be of a closed cell design
Flame Arrester	Flame arrester should be provided, if applicable in the tube which connects the assembly to the absorption cell
Cell Design holder	The design of the cell holder should give a firm and easily adjustable (for alignment) mounting on the burnerhead.
System accessories	Complete with necessary reagent bottles, connectorsetc.

Hollow Cathode lamps	Hollow cathode lamps. One lamp each for the elements: Arsenic, Antimony, Boron, Calcium, Chromium, Cobalt, Copper, Iron, 19 Nickel, Lead, Manganese, Mercury, Selenium, Tin, Vanadium and Zinc. All lamps should becoded lamps only. Non coded lamps will not be acceptable. Equivalent coded lamps will also be acceptable.
Air Compressor	With Air Filter or equivalent Air Service Unit Complete with pressure regulator quite in operation, necessary tubing and connectors and should meet the air supply requirements of AAS operation
Oil Free Pump	Oil- free pump and moisture trap Corrosion Resistant toacidic vapour and the drain value (if any) should be made of stainless steel of equivalent corrosion resistant material
Nitrous oxidegas regulator	Nitrous oxide gas regulator (two stage) with heater, with necessary tubing and connectors. Transformer if necessary should be provided to transform this supply to the requirements of the heater. The heater should work on 230±10volts 50 Hz AC power supply
Acetylene Gas regulator	Acetylene gas regulator (two stage) with necessary tubing and connectors
Nitrogen and Argon Gas regulator	Nitrogen and Argon regulator (two stage) with necessary tubing and connectors
Graphite Furnace System	Graphite Tube: Atomizer Should be computer controlled fully enclosed graphite tube system consisting of stabilized temperature / total pyrolytic graphite plate form/wall atomization. The system should also be equipped with an integrated graphite furnace camera for easy auto sampler tip alignment and real time viewing of the process happening in graphite furnace.
Background correction technology	The system should be fitted with D2 background correction for flame technique and Zeeman background correction for furnace technique.
Gas Supplies	Provision of two gas supplies (program selectable) with independent control over the gas supply through the furnace
Heating Rate	Heating rate of at least 2000°C per second
Temperature Range	Temperature range ambient to 2600°C or more in 10°C Increments
Feedbacksystem	Feedback system for furnace temperature control, interlocks for water, gas, temperature, furnace door, graphite tube damage and mains power

Temperature Programming	At least 8-10 steps temperature programming facility with flexibility of program selection, ramp time, gases, gas flow and read trigger for 20 each temperature step
Furnace Control:	Computer controlled with appropriate provision for print out of the furnace and sample parameters
Display	Calibration data / graphs, temperature profiles, signal graphics and the instrument status onscreen
Memory:	Memory should be able to store at least ten nonvolatile Programs
Cooling WaterRe-circulation Unit	Water circulation unit of appropriate capacity. No discharge of water from this water circulation unit
Data work station	Application Software: • Program facility with multitasking software • Should provide complete control of instrument with instrument status display and its various accessories. • Provide accurate and reproducible time averaged, integration, non — averaged integration, multi-level calibration. • Software should handle instrument linear absorbance reading, concentration, or emission intensity, integration time, built-in statistics, calibration equation control, slope of analytical curve using operator selective calibration standard • Built-in interface for computer connection and use ofoptional accessories. Comprehensive qualitycontrol protocols facility including blank, multiple quality control standards, QA/QC audit trail and calibration failure.
Standards	AAS standard reference materials 100 ml, 1000 ppm from NIST one each for all metals
Computer system:	• Make: Reputed brand such as HP/Compaq/IBM/ Dell • Processor: Intel core 2 duo processor 3.00 GHz or highest version • RAM: 4 GB (upgradable up to 8 GB) HDD 500 GB ultra DMA or higher HDD (7200 RMP) • Monitor: 21" TFT – LCD Flat Colour • CD ROM: 52X CD- ROM • DVD-CDRW: 32X DVD-ROM and CDRW – combo Drive Max speed 48x24x48 • Ports: 2 serial, 1 parallel and 2 USB front 6 rear USB2PS/2 Port, 1 VGA integrated Port 1line in/out port • Key Board: 104 keys • Mouse: Optical mouse with pad • Ethernet: 32 bits auto selectable 10/100 MBPS • Graphics: Internet ready with integrated graphics • Sound: Integrated sound card and inbuilt stereo speakers

	Printer HP Laser jet Printer 1200 x 1200 dpi 12 PPMblack.
Operation software	• Preloaded Windows of most recent version of operating system with License • MS Office Most recent licensed version with media, manual Preloaded Antivirus with latest version along with License
Additional items	• Operation Kit: Manufacturers Standard Operation Kit including all required items, tubing, fittings for startup / regular operation of instrument. • Operation / maintenance: Manual Operation / maintenance Manual for each unit Analytical manual • Analytical manual: including applications for flame, VGA and graphite system Service Manual • Service manual: with one set of required tools for each system / unit • Trouble Shooting Charts, Spare parts Catalogue, Application Notes for trace metal analysis in food and water samples • Dust Cover One for each unit Consumables for 5000 analyses for each of the following units for each of the following units: Flame AAS (basic unit, burner system) Vapor generation assembly Graphite Furnace Atomizer and Auto samplers
Supplier/ Manufacturer	• Must be ISO certified for quality
Recommendations orWarnings	• Any warning signs would be adequately displayed
Warranty	• 2 years after satisfactory installation and working excluding consumable parts and accessories. Provision should be there to extend the warranty up to 3 years (at least)
Training	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on-site comprehensive training for a minimum oftwo scientific personnel operating the system till customer satisfaction
List of Spares and Accessories	List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs infuture after guarantee/warranty period should be attached
Quality Requirement	Should be compliant with the requirements of FDA/CE/BIS Electrical safety conforms to the standards for electrical safety IEC60601- General requirements (or equivalent BIS Standard) Electrical Safety conforms to EN 61010-1:2016/61101-1/IEC61010-2-40 Should have necessary certification for safety and quality standards from national/ international bodies Electromagnetic compatibility as per 61326-1:2013

IQ/PQ/OQ	On site IQ, OQ of instrument along with document to be provided & supplier to assist till satisfactory PQ of instrument
After sales service/Post warranty	Contact details of manufacturer, supplier and local service agentto be provided, including toll free/ Landline Number; Should have a good after sales service/technical support capable of reaching at short notice the places where instrument is installed. Visits and unlimited breakdown calls by service/application support, engineers should attend immediately without fail. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warranty shall be quoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified
Compliance statement	The quote should also include a compliance statement vis-à-vis specifications in a "tabular form" clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result in disqualification.
Outage conditions	After two years of warranty period, 3 years of CAMC shall be undertaken by the supplier. This would also include: (i) Preventive maintenance service: The seller will provide a minimum of two Preventive Maintenance Service visits during a year to the operating base to carry out functional checkups and minor adjustments/tuning as may be required. (ii) Breakdown Maintenance Service: In case of any breakdown of the equipment/system, on receiving a call from the buyer,
	the seller is to provide maintenance service to make the equipment/system serviceable. (b) Response time: The response time of the seller should not exceed 48 hours from the time the breakdown intimation is provided by the Buyer. (c) Serviceability of 90% per year is to be ensured. This amounts to total maximum downtime of 37 days per year. Also unserviceability should not exceed 2 working days at one time. Required spares to attain this serviceability may be stored at site by the seller at his own cost. Total down time would be calculated at the end of the year. If downtime exceeds permitted downtime 'Liquidated Damages' would be applicable for the delayed period. (d) Maximum repair turnaround time for equipment/system would be 3 days. However, the spares should be maintained in a serviceable condition to avoid complete breakdown of the equipment/system.

Location Details :

Director, IPM, Public Health Laboratories & Food (Health) Administration, Gollapudi, Vijayawada in Andhra Pradesh

SECTION – VI

PRE - QUALIFICATION CRITERIA

(Referred to in clause 13.3 of ITB)

I. Terms of Qualification for Equipment:

The Authorized Distributor or manufacturer should have supplied similar equipment as specified in the schedule of requirements to any Indian Institutions, up to the following quantity in any one of the last three calendar/financial years and completed the supplies within the stipulated delivery period. The Supplied units should be in working condition without any adverse remarks for the last two years as on the date of bid notification.

(a). at least equal of the quantity offered or 25, whichever is lowest, if the tender quantity is ≤49 (or)
(b). at least 50% of the quantity offered or 70, whichever is lowest, if the tender quantity is between 50 and 199
(c). at least 35% of the quantity offered or 125, whichever is lowest, if the tender quantity is between 200 and 499
(d). at least 25% of the quantity offered, if the tender quantity is > 500

- The bidder should furnish the information on past supplies and satisfactory performance in the proforma given under Section XI- Format B1, duly attested by the Bid signatory

- Bidders shall invariably furnish documentary evidence (End-user Certificate) in support of the satisfactory operation of the equipment as specified or a CA/Statutory auditor Certificate to that extent as per the format provided in the Section XI- Format B2

- The Bidder shall have an Avg. annual turnover in the last three financial years of not less than the amount specified against each item in the Schedule of the Requirements and also to have a positive net worth as per the latest Annual Accounts.

- Towards the above, the bidder should furnish data as per the Format (B3) given in Section- XI, to support that he has the financial capacity to perform the contract. Further the bidder as to submit the corresponding Balance Sheets and Profit and Loss Accounts for verification

a) The Manufacturer, must have necessary quality certifications for processes such as ISO 9001 Quality Management System for Organization / ISO 13485 Quality Management System for Medical Device.

b) Full Quality Assurance System Approval certificate Management System Certification for Medical Devices and their equivalent International Standards certificates as BIS/CE/USFDA etc.

II. Terms of Disqualification:

1. The Bidders who has withdrawn their bids in any of the previous tenders of APMSIDC

2. A bidder who is placed on the black-list by either APMSIDC or by any other State /Central government's department or organization for the product offered with his bid in the last 3 years

3. A bidder who is placed on the black-list by either APMSIDC or by any other State / Central government's department or organization in the last 3 years

4. A bidder who is currently blacklisted / debarred either by APMSIDC or by any State Government or Central Government Department or Organization

5. The bidder who has been declared as ‘undependable supplier’ for two (2) items or in two (2) instances in the last one year by the APMSIDC and

6. The bidders against whom there have been reports of substandard Equipment and/or service are liable for disqualification.

Note: In all the above cases, the disqualification cut-off date will be till the contract is signed

III. Not with standing anything stated above, the purchaser reserves the right to assess the Bidders capabilities and capacity to perform the contract should circumstances warrant such an assessment in the overall interest of the purchaser deciding on award.

SECTION – VII (A): BID FORM

(Name and Address of Purchaser)

Date_____

To
The Managing Director,
APMSIDC, Mangalagiri, Guntur.

Contract No._____

Gentlemen:

Having examined the Bidding Documents including Addenda No. _____ the receipt of which is hereby duly acknowledged, we, the under-signed, offer to supply and deliver _____ (Description of Goods and Services) in conformity with the said Bidding Documents for the sum as given in the Price Bid (electronically) or such other sums as may be ascertained in accordance with the schedule of prices furnished and made part of this bid.

We undertake, if our bid is accepted, to commence delivery within 120 (Number) days and to complete delivery of all the items and perform incidental services as specified in the contract within 120 (Number days calculated from the date of receipt of your Notification of Award/Letter of credit.

If our bid is accepted we will obtain the guarantee of a bank in a sum not exceeding 5% of the Contract price for the due performance of the Contract

We agree to abide by this bid for a period of 90 (Number) days from the date fixed for bid opening under Clause 22 of the Instruction to Bidders and shall remain binding upon us and may be accepted at any time before the expiration of that period.

We undertake that, in competing for (and, if the award is made to us, in executing) the above contract, we will strictly observe the laws against fraud and corruption in India like “The Prevention of Corruption Act 1988”

Until a formal contract is prepared and executed, this bid, together with your written acceptance thereof and your notification of award shall constitute a binding contract between us.

We understand that you are not bound to accept the lowest or any bid you may receive.

Dated this _____ day of _____

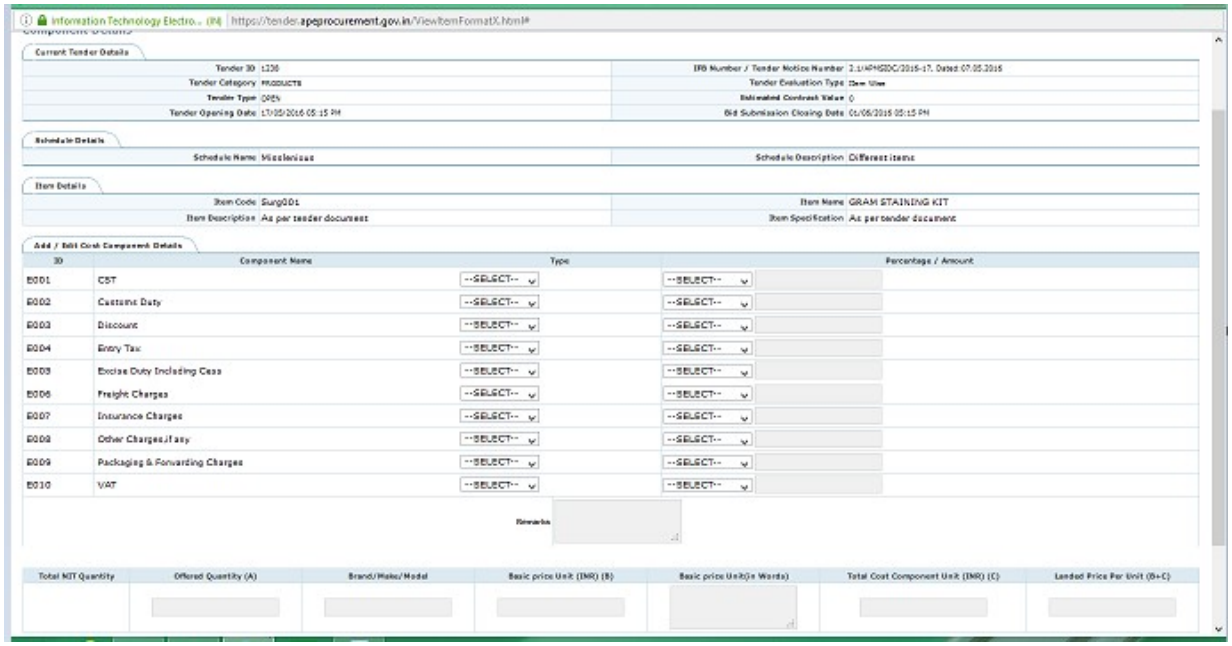
Signature: _____

(in the Capacity of) : _____

Duly Authorized to sign bid for and on behalf of

_____

Section VII (B) - Model PRICE Schedules (available on e-procurement Platform)



SECTION – VIII
Bid Security Form

To

The Managing Director
APMSIDC, Mangalagiri, Guntur.

Whereas _____
(hereinafter called "the Bidder" has submitted its bid dated _____ for the supply of _____ (hereinafter called "the Bid")

KNOW ALL MEN by these presents that WE _____ of _____ having our registered office at _____ (hereinafter called the Bank") are bound unto _____ (hereinafter called "the purchaser") in the sum of _____ for which payment will and truly to be made to the said purchaser, the Bank binds itself, its successors and assigns by these presents. Sealed with the common Seal of the said Bank this _____ day of _____.

THE CONDITIONS of this obligation are:

If the Bidder withdraws its Bid during the period of bid validity specified by the Bidder on the Bid form; or

If the Bidder, having been notified of the acceptance of its bid by the Purchaser during the
period of bid validity:

- Fails or refuses to execute the contract form if required
- Fails or refuses to furnish the performance security, in accordance with the Instruction to Bidders
- Does not accept the correction of the bid price pursuant to Clause 15.7(c).

We undertake to pay the purchaser up to the above amount upon receipt of its first written demand, without the purchaser having to substantiate its demand, provided that in its demand the purchaser will note that the amount claimed by it is due to owing to the occurrence of one or both of the two conditions, specifying the occurred condition or conditions.

This guarantee will remain in force up to and including 45 days after the period of the bid validity, and any demand in respect thereof should reach the Bank not later than the above date i.e., upto _____.

…….(Signature of the Bank)

SECTION – IX : CONTRACT FORM

THIS AGREEMENT made the _____ day of _____ between _____ (Name of Purchaser) of _____ (Country of Purchaser) (hereinafter "the Purchaser") of one part and _____(Name of the Supplier) of _____ (City and Country of Supplier) (hereinafter "the Supplier") of the other part.

WHEREAS the Purchaser is desirous that certain Goods and ancillary services should be provided by the supplier, viz, _____ (Brief description of Goods and Services) and has accepted a bid by the supply of Goods and services in the sum of _____ (Contract price in Words and Figures) (hereinafter "the Contract Price").

NOW THIC AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the conditions of Contract referred to;

2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz.:

   (a) The Technical and Price bid of the Supplier
   (b) The approved Technical Specifications,
   (c) The General Conditions of Contract,
   (d) The Special Conditions of Contract, and
   (e) The Purchaser's Notification of Award.

3. In consideration of the payments to be made by the purchaser to the Supplier as hereinafter mentioned, the Supplier hereby covenants with the Purchaser to provide the Goods and Services and to remedy defects therein in conformity in all respects with the provision of the Contract.

4. The Purchaser hereby covenants to pay the Supplier in consideration of the provision of the Goods and Services and the remedying of defects therein, the Contract price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

5. Brief particulars of goods and services which shall be supplied/provided by the Supplier are as under.

SL NO.	BRIEF DESCRIPTION TO GOODS & SERVICES	QUANTITY TO BE SUPPLIED	UNIT PRICE	DELIVERY TERMS

TOTAL VALUE:

DELIVERY SCHEDULE:

IN WITNESS whereof the parties here to have caused this Agreement to be executed in accordance with their respective laws the day and year first above written.

Signed, Sealed and Delivered by the

Said _____ (For the Purchaser)

in the presence of _____

Signed, sealed and Delivered by the

Said _____ (For the supplier)

In the presence of _____

SECTION- X: PERFORMANCE SECURITY FORM

To

The Managing Director
APMSIDC,
Mangalagiri, Guntur.

WHEREAS _____ (Name of the Supplier) hereinafter called "the Supplier" has undertaken, in pursuance of Contract No. _____ dated _____ to supply _____ (Description of Goods and Services) hereinafter called "the Contract".

AND WHEREAS it has been stipulated by you in the said contract that the Supplier shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with the Supplier's performance obligations in accordance with the Contract.

AND WHEREAS we have agreed to give the Supplier a Guarantee:

THEREFORE WE hereby affirm that we are Guarantors and responsible to you, on behalf of the Supplier, up to a total of _____ (Amount of the Guarantee in Words and Figures) and we under take to pay you, upon your first written demand declaring the Supplier to be in default under the Contract and without cavil or argument, any sum or sums within the limit of _____ (Amount of Guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until the _____ day of _____.

Signature and seal of Guarantors

_____

_____

Date _____
Address_____

_____

SECTION XI

FORMAT B1: PROFORMA FOR PERFORMANCE (for a period of last three years)

(Please see Section VI: Qualification Criteria)

Bid No. _____ Date of Opening _____ Time _____ Hours

Name of the Firm _____

Order placed by _____ _ (Full address of Purchaser)	Order No	Date	Description of Item	Quantity of ordered Items.	Value of order	Date of completion of delivery		Remarks indicating reasons for late delivery, if any	Has the Supplier received full payment towards the supplies made
						Purchase terms	Actual		
1	2	3	4	5	6	7	8	9	10

Signature and seal of the Bid Signatory

_____

_____

_____

SECTION XI

FORMAT B2

CA (STATUTORY AUDITOR) CERTIFICATE

(Please see Section VI: Qualification Criteria)

Certificate from the Statutory Auditor

This is to certify that ..... (name of the Bidder) is a "Manufacturer/Authorized Distributor" of the required items offered under the Bid. The Bidder had supplied the quantities shown in the past performance statement and also completed the respective supplies within the stipulated delivery period/s.

Further it is certified that the previously supplied equipment are reported to be in working condition without any adverse remarks from the respective users and some are working for more than two year as per the records as on the date of this Tender notification.

The bidder has previous experience in maintenance and repairs of equipment for _____ years and has qualified service staff working with him".

Name of Authorized Signatory:
Designation:
Name of firm:

(Signature of the Authorized Signatory)
Seal of the Firm

SECTION XI

B3- FINANCIAL CAPACITY OF THE MANUFACTURER

A. Details of Annual Turnover for Preceding 3 Years.

	Year 1 (2020-21)	Year 2 (2021-22)	Year 3 (2022-23)	Average Annual Turnover
Turn Over (In Rs. Crores)				

B. Details of Net Worth

	Year1 (Last Financial Year i.e. as on 31st March 2023)
Paid up Capital (Rs. Cr)	
(Add) Free Reserves (Rs. Cr)	
Total Net Worth (Rs. Cr)	

_____

(Signature of Bid Signatory)
Seal of the Firm

Certificate from the Statutory Auditor

This is to certify that .....(name of the Bidder) has an average annual turnover (in the last three financial years) and Net Worth (in the last financial year) as shown above

Name of Authorized Signatory:
Designation:
Name of firm:

(Signature of the Authorized Signatory)
Seal of the Firm

SECTION XI

B3-A FINANCIAL CAPACITY OF THE DISTRIBUTOR

A. Details of Annual Turnover for Preceding 3 Years.

	Year 1 (2020-21)	Year 2 (2021-22)	Year 3 (2022-23)	Average Annual Turnover
Turn Over (In Rs. Crores)				

B. Details of Net Worth

	Year1 (Last Financial Year i.e. as on 31st March 2023)
Paid up Capital (Rs. Cr)	
(Add) Free Reserves (Rs. Cr)	
Total Net Worth (Rs. Cr)	

_____

(Signature of Bid Signatory)
Seal of the Firm

Certificate from the Statutory Auditor

This is to certify that .....(name of the Bidder) has an average annual turnover (in the last three financial years) and Net Worth (in the last financial year) as shown above

Name of Authorized Signatory:
Designation:
Name of firm:

(Signature of the Authorized Signatory)
Seal of the Firm

SECTION – XII -A

(Please see Clause 13.3(a) of Instructions to Bidders)
(to be submitted by manufacturers)

MANUFACTURER'S AUTHORIZATION FORM
No._____ dated _____

To
The Managing Director
APMSIDC, Mangalagiri, Guntur.
Dear Sir,

Tender Notice No._____

We _____ who are established and reputable manufacturers of _____ having factories at _____ and _____ do hereby authorize M/s. _____ (Name and address of Agents) to bid, negotiate and conclude the contract with you against Tender Notice No._____ for the above goods manufactured by us.

No company or firm or individual other than M/s. _____ are authorized to bid, negotiate and conclude the contract in regard to this business against this specific Tender Notice.

We hereby declare that we are willing to provide guarantee/warranty and after sales service during the period of comprehensive warranty/CMC/AMC as per the above tender.

We also hereby declare that we have the capacity to manufacture and supply, install and commission the quantity of the equipments tendered within the stipulated time.

We hereby extend our full guarantee and warranty as per Clause 15 of the General Conditions of Contract and read with the Clause 10 of Special Conditions of Contract, for the Goods offered for supply against this invitation for bid by the above firm.

Yours faithfully,

(Name) for and on behalf of M/s.

_____(Name of manufacturers)

Note: This letter of authority is on the letterhead of the manufacturing concern and should be signed by a person competent and having the power of attorney to bind the manufacturer.

SECTION – XII -B

(Please see Clause 13.3(a) of Instructions to Bidders)
(to be submitted by Authorized Distributors))

MANUFACTURER'S AUTHORIZATION FORM
No._____ dated _____

To
The Managing Director
APMSIDC, Mangalagiri, Guntur.
Dear Sir,

Tender Notice No._____

We _____ who are established and reputable manufacturers of _____ having factories at _____ and _____ do hereby authorize M/s. _____ (Name and address of Agents) to bid, negotiate and conclude the contract with you against Tender Notice No._____ for the above goods manufactured by us.

No company or firm or individual other than M/s. _____ are authorized to bid, negotiate and conclude the contract in regard to this business against this specific Tender Notice.

We also hereby undertake to provide full guarantee/warrantee/CMC/AMC as agreed by the tenderer in the event the tenderer is changed as the dealers or the tenderer fails to provide satisfactory after sales and service during such period of comprehensive warranty/CMC/AMC and to supply all the spares/ reagents during the said period.

We also hereby declare that we have the capacity to manufacture and supply, install and commission the quantity of the equipments tendered within the stipulated time.

We hereby extend our full guarantee and warranty as per Clause 15 of the General Conditions of Contract and read with the Clause 10 of Special Conditions of Contract, for the Goods offered for supply against this invitation for bid by the above firm.

Yours faithfully,
(Name) for and on behalf of M/s.

_____(Name of manufacturers)

Note: This letter of authority is on the letterhead of the manufacturing concern and should be signed by a person competent and having the power of attorney to bind the manufacturer.

SECTION - XIII

DECLARATION FORM

I / We …….. having Our …….. office at ……. read and understood the terms and conditions contained in the bidding documents under this notification for bid and offer our bids unconditional, to the extent not stated at any other part of our bid.

We will not quote or supply the equipment/furniture similar to the ones offered under this bid notification to any agency or organization in the country, at the rate lower than the rate quoted in this present tender.

If we found quoting lower rate than the rate quoted to the APMSIDC, to any other agency in the country during the validity of the present contract, we will remit the differential cost to the APMSIDC, unconditionally.

Signature :

Date :

Name of the
Firm and address :

SECTION XIV

Check List of Documents to be Uploaded as part of the Bid and Notes to Bidders

I. Documents with the Technical Bid

Sl. No	Document Description	Documents to be submitted
1	Process Fee 59,000/-	Online
2	EMD	Online & Offline
3	Bid Form Section VII-A	Online & Offline
4	List of items offered with Make and Model details without prices	Online & Offline
5	Manufacturers Authorization	Online & Offline
6	Past Performance Details Format B1 along with supporting documents	Online & Offline
7	End-User Certificates or CA Certificate as per Format B2	Online & Offline
8	Financial Capability Details Format B3 for Manufacturer	Online & Offline
9	Financial Capability Details Format B3-A Distributor	Online & Offline
10	Details and proof of After-Sales Service facilities	Online & Offline
11	Letter of authorization to sign the bids	Online & Offline
12	Clause-by-clause commentary on technical specifications	Online & Offline
13	Technical and Commercial deviations statements	Online & Offline
14	Copy of the GST Certificate and Details of IT Returns- (Last 3 years), PAN and GST copies.	Online & Offline
15	The Manufacturer, must have necessary quality certification i.e. ISO 9001 & 13485 (Quality Management System for Medical Devices)., (wherever required)	Online & Offline
16	Full Quality Assurance System Approval Certificate Management System Certification for Medical Devices and their equivalent International Standards certificates (BIS/CE/USFDA)	Online & Offline
17	Memorandum of Articles	Online & Offline
18	All the uploaded Technical bid, to be attested by a Gazette Officer or properly notarized or self attested	Online & Offline
19	General Information about the Tender	Online & Offline
20	Declaration form	Online & Offline
21	DPIIT Certificate (If applicable)	Online & Offline

Sl. No	Document Description	Documents to be submitted
22	Qualification criteria mentioned for Turnkey and Manpower	Online & Offline

II. Financial (Price) Bid in the format available with the e-procurement platform

- Please note that the Bidder runs the risk of his bid being rejected if the price schedule contains any conditions.

Notes to Bidders

1. Upload the documents in ZIP format with suitable description as defined above.
2. The scanned documents shall be legible failing which they will not be considered.
3. Sign on all statements, documents, certificates uploaded owning responsibility for their correctness / authenticity.
4. All the statements copies of the certificates, documents etc., enclosed to the Technical bid shall be given page numbers on the right corner of each certificate
5. The tenderer is subjected to be blacklisted and the EMD forfeited if he is found to have mislead or furnished false information in the forms / statements / certificates submitted in proof of qualification requirements or record of performance (Please see Corrupt and Fraudulent Practices Clause)
6. All the Bidders are requested to quote with single option only, for the each item offered and please note that bids with multiple options, for any one or all of the items offered, will be rejected by the purchaser as Non-responsive.

(On Firm letter Head) **Annexure - I**

ANDHRA PRADESH MEDICAL SERVICES CORPORATION LTD

INSTALLATION CERTIFICATE

(to be fiiled jointly by the Tenderer, head of user institution & Representative of the Tender Inviting Authority individually for every equipment)

HOSP CODE/ Hospital Name:					
Equipment Details					
EQPT CODE/ Name of the equipment:			Purchase Order No:		
Make / Manufacturer			Purchase Order Date:		
Model			Purchase Amount		
Serial no.			Project Name		
Location / Department					
Installation Start Date			Completed Date.		
Comprehensive Warranty Start Date			Comprehensive Warranty End Date:		
Preventive Maintenance Schedule (Specify Year & Month)					
YEAR	Visit 1	Visit 2	Visit 3	Visit 4	
Contact Details					
SUP.CODE / Name of the Supplier					
Name of Service Engineer			Mobile No.		
Service Centre Manager's name			Mobile No.		
Service center address					
Accessories supplied					
Sl. No.	Item	Qty.	Serial No.	Remarks	
To be filled by Institution					
Whether the sticker affixed on all the key components of the equipment or on a conspicuous place in the installed room/storage area?					YES / NO (*tick one)*
Whether a digital Photograph of the installed equipment taken after affixing the sticker in the presence of the hospital personnel?					YES / NO
Whether the Demonstration of the equipment with accessories on the technical specification/key features was conducted to the satisfaction at					YES / NO

the time of installation?			
Whether training was conducted to the satisfaction at the time of installation?			YES / NO
Short supply items, if any			
Remarks of hospital authorities			
Recommend to release payment YES □ NO □		The equipment is working satisfactorily YES □ NO □	
The equipment was installed and handed over on *(Installation date to be fiiled in by the Head of the institution or by the end user)*			
Name of Service Engr.		Sign.	
Name of End User & Department Mobile No.		Sign.	
Name of Bio Medical Engr. & Organization		Sign.	
Signature of the Superintendent. Mobile No.		Sign. & Seal	
Date: Seal of supplier:		Date: Hospital Seal:	

Note: The installation report shall be submitted in a single sheet printed back to back and shall be submitted individually for each equipment installed.

Annexure - II

On Consignee letter Head

Dt:_____

ANDHRA PRADESH MEDICAL SERVICES & INFRASTRUCTURE DEVELOPMENT CORPORATION (APMSIDC)

THREE MONTHs PERFORMANCE CERTIFICATE

(to be fiiled by the head of user institution individually for every equipment)

HOSP CODE / Hospital Name:			
SUP.CODE / Name of the Supplier			
Equipment Details			
EQPT CODE /Name of the equipment:		Purchase Order No:	
Make / Manufacturer		Purchase Order Date:	
Model		Purchase Amount	
Serial no.		Project Name	
Date of Installation		Location / Department	
Whether Equipment working satisfactorily without any problem for one month?		YES □ NO □	
If No, provide details of equipment failure in the first month *(attach additional details if any in a separate sheet)*			

BREAK DOWN DETAILS

Break down Reported Date	Attended date	Rectified date	Attended by	Details of beak down / service

Present status of the equipment	Working satisfactorily □ Not working satisfactorily □
Recommended to settle the final payment	YES □ NO □
Recommend for trial run for one more month	YES □ NO □
Performance of accessories supplied	
Further Training	Required □ Not required □
Remarks of hospital authorities	

Three month performance certificate was issued on
(date to be filed in by the Head of the institution or by the end user)

Name of End User & Department		Sign.	
Signature of the Superintendent.		Sign. & Seal	

Date: Seal of supplier:	Date: Hospital Seal :

Annexure - III

ANDHRA PRADESH MEDICAL SERVICES & INFRASTRUCTURE DEVELOPMENT CORPORATION (APMSIDC)

WARRANTY CERTIFICATE

(to be fiiled jointly by the Tenderer, head of user institution & Representative of the Tender Inviting Authority individually for every equipment)

Date:

APMSIDC Supply order No: .....dated.....

The equipment ..... *(Equipment Name)* Model No..... bearing serial no ..... was installed successfully at ..... (*Institution Name*) is offered with a comprehensive warranty for a period of..... Years starting from ..... to ..... including all the following accessories;

Sl. No	Name of the accessory	Manufacturer's name	Equipment Serial No.	Qty

Name of the Supplier: Signature: Seal:	Name of the Supdt. / End User: Signature: Seal:

Annexure - IV

ANDHRA PRADESH MEDICAL SERVICES & INFRASTRUCTURE DEVELOPMENT CORPORATION (APMSIDC)

PREVENTIVE MAINTENANCE CHECK LIST

Equipment Name.

Sl. No.	Activities carried out during Preventive Maintenance visit	Visit 1	Visit 2	Visit 3	Visit 4
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					

Annexure-V

ANDHRA PRADESH MEDICAL SERVICES & INFRASTRUCTURE DEVELOPMENT CORPORATION (APMSIDC)

CALIBRATION CHECK LIST

Equipment Name

Model.

Sl. No.	Parameters to be calibrated	Frequency of calibration required
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		

Annexure-VI

ANDHRA PRADESH MEDICAL SERVICES & INFRASTRUCTURE DEVELOPMENT CORPORATION (APMSIDC)

List of Spare Part

Equipment Name :

Make:

Model

Sl. No.	Spare name	Cost (inclusive of all charges)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		

Signature :

Date :

Name of the
Firm and address :

Annexure-VII

ANDHRA PRADESH MEDICAL SERVICES & INFRASTRUCTURE DEVELOPMENT CORPORATION (APMSIDC)

GENERAL INFORMATION ABOUT THE TENDERER

Name of the Tenderer

Registered address of the firm

State: District

Telephone. No. Fax. No. Email.

3	Address			
	State		District	
	Telephone No.		Fax	
	Email		Website	

Type of Firm (Please □ relevant box)

4	Private Ltd.		Public Ltd.		Proprietorship	
	Partnership		Society		Others, specify	
	Registration No. & Date of Registration.					
	Nature of Bussiness (		-lease □ relevant box)			
5	Original Equipment Manufacturer		Authorized Dealer /Representative			
	Direct Importer		Others, specify.			

Annexure-VIII

SERVICE CENTRE DETAILS

TOLL FREE NUMBER, IF ANY			
Sl. No	Name and address of the service center (s)	Contact Details	
1		Telephone No:	
		Fax No:	
		Email ID.	
		Name of the Service Engr.	
		Mobile No.	
2		Telephone No:	
		Fax No:	
		Email ID.	
		Name of the Service Engr.	
		Mobile No.	
3		Telephone No:	
		Fax No:	
		Email ID.	
		Name of the Service Engr.	
		Mobile No.	