

**Food Safety and Standards Authority of India**  
(A statutory Authority established under the Food Safety and Standards Act, 2006)  
(Quality Assurance Division)  
**FDA Bhawan, Kotla Road, New Delhi – 110002**

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Dated, the 16<sup>th</sup> July, 2021

**RFP No. 02/2020-21 SETTING UP MICROBIOLOGY SECTION AND  
INSTALLATION OF EQUIPMENTS: CORRIGENDUM**

Further to this office Tender Enquiry No. 02/2020-21 dated 18<sup>th</sup> June 2021, pre-bid meeting held on 30<sup>th</sup> June 2021 and representation received from participants. The following amendments are made in the ibid tender:

3. General information about the tender is as follows: -
- (a) Queries to be addressed to : Nilesh.ojha@gov.in
  - (b) Name/designation of contact person : Nilesh Kumar Ojha  
Asstt. Director(QA)
  - (c) Telephone No. : 9999438263
  - (d) Last Date and Time for Receipt of Tenders : **30<sup>th</sup> July 2021 at 1500 Hrs**
  - (e) Date and Time of Opening of Tenders : **02<sup>nd</sup> August 2021 at 1100 Hrs**

**PART I – GENERAL INFORMATION AND INSTUTIONS**

17. **Last date and time for depositing the Bids:** 30<sup>th</sup> July 2021 by 1500 Hrs. The bids under two bid system (i.e. Technical Bid & Commercial Bid) should be submitted on CPP's e-Procurement portal by the due date and time. The responsibility to ensure this lies with the Bidder.
18. **Time and date for opening of Technical Bids:** The technical bids will be opened on **02<sup>nd</sup> August 2021 at 1100 hrs.** (If due to any exigency, the due date for opening of the Technical-Bid is declared a closed holiday, then it will be opened on the next working day at the same time or on any other day/time, as intimated by this office).

**PART II – ESSENTIAL DETAILS OF ITEMS/SERVICES REQUIRED**

2. **Technical Details:**

**PART-B**

Sl.No.	Instruments/Consumables	Qty
1.	Laminar Air Flow	02
2.	Bio Safety Cabinet Class II Type B2 (Total Exhaust)	01
3.	Autoclave Vertical	03

4.	Incubators: Ambient to 70 °C	01
5.	Incubators: 5 °C to 50°C	01
6.	Digital Colony Counter	02
7.	Lab Blender	02
8.	Water Bath – Serological	01
9.	Analytical Balance	03
10.	Upright Frost Free Vertical Deep Freezer (-20°C)	02
11.	UV-Vis Spectrophotometer	01
12.	Binocular Microscope	01
13.	Howard Mold Counter	01
14.	Refrigerated Centrifuge	01
15.	BOD Incubator	02
16.	Micro Filtration Assembly	01
17.	Digital pH Meter	02
18.	Fumigator	01
19.	UV Viewing Chamber	01
20.	Anaerobic Jar	01
21.	Hot Air Oven	02
22.	Micropipette	02 Set (06each)
23.	Carbon dioxide incubator	01
24.	Frost Free Double door (side by side)Refrigerator	02
25.	Microbiological Media And Consumables	As per list attached in Technical Bid

3. **Delivery Period**– Delivery period for setting up Microbiology section and installation of equipments would be **270 days** from the date of issue of Supply Order. Please note that Supply Order can be cancelled unilaterally by the Buyer in case items are not received within the Supply Order delivery period. Extension of Supply Order delivery period will be at the sole discretion of the Buyer, with applicability of Liquidated Damages(LD) clause.

6. **Eligibility Criteria for Pre-Qualification of Bidders.** 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 i.e. 2017-18. 2018-19 and 2019-20 should not be less than Rs.05(Five) Crore. Documentary evidence duly attested by a Chartered Accountant/Company Secretary should be submitted alongwith the Technical Bid. Bidders should also enclose notary attested copy of IT returns filed for the last three financial years, notary attested audited copy of audited accounts, balance sheet, annual report etc.

10. **Bid Form**

**TECHNICAL BID FORM (A)**

1.	Tender to be submitted on	CPP's e-Procurement portal
2.	Closing date and time for receipt of Tenders.	1500 hrs on <b>30<sup>th</sup> July 2021</b>
3.	Time, date & place of opening of Technical Bids	1100 hrs on <b>02<sup>nd</sup> August 2021</b> in Conference Hall, Food Safety and Standards Authority of India, FDA Bhawan, Kotla Road, New Delhi-110002
4.	Schedule of Requirements and other Technical features as contained in Part II of the RFP	Complied / Not complied
5.	Bank Solvency Certificate (issued not earlier than 28 <sup>th</sup> February 2021)	Enclosed / Not enclosed
6.	Authenticated copy of PAN	Enclosed / Not enclosed
7.	Authenticated copy of GST Regn.	Enclosed / Not enclosed
8.	Tender Bid valid for acceptance up to 12 months from the date of opening of the commercial bid.	Accepted / Not Accepted
9.	Experience Certificate of having successfully setting up of Microbiology section and installation of equipments of similar nature.	Enclosed / Not enclosed
10.	Average Annual Financial Turnover during the last three Financial years 2019-20, 2018-19 and 2017-18, should not be less than Rs. 05(Five)Crore.	Enclosed / Not enclosed
11.	Bid Security Declaration as per para 6(iii) of Part I of the RFP	Enclosed / Not enclosed
12.	Declaration form as per Annexure I	Enclosed / Not enclosed
13.	Certificate of Guarantee/Warranty as per Annexure VIII	Enclosed / Not enclosed
14.	An undertaking that the bidder has not been blacklisted/debarred by any State Govt./ Central Govt. Department/organization as per Annexure IX	Enclosed / Not enclosed
15.	General Information about the Bidder as per Annexure X	Enclosed / Not enclosed
16.	Compliance sheet as per Annexure XI	Enclosed / Not enclosed
17.	Documentary proof shall be submitted on the after sales facilities and expertise of the bidder	Enclosed / Not enclosed
18.	Satisfactory Completion certificate of having successfully setting up of laboratory and installation of analytical equipments or work order towards setting up of microbiology lab	Enclosed / Not enclosed

Signature of Bidder \_\_\_\_\_  
 Name in Block letters \_\_\_\_\_  
 Capacity in which signed \_\_\_\_\_  
 Date \_\_\_\_\_

Stamp of the Firm

**TECHNICAL BID FORM (B)**

(a) The bids of only the technically qualified bidders will be eligible for consideration for opening of financial bid. The technical bid of the bidders will be evaluated on the basis of specification of the offered model vis-à-vis the prescribed specification given below :

**1. Laminar Air Flow(Vertical)**

S. No.	Specifications	Requirement	Please Specify whether the quoted model/items meets the specification (Yes/No)	Specify Make and Model
1.	<b>Main body</b>	Complete body with Stainless Steel 304		
2.	<b>Inner Surface</b>	Inner Back wall & Side wall made in stainless steel, grade SS 304		
3.	<b>Work Surface</b>	Seamless, Scratch-free, high quality 18 gauge stainless steel, grade 304		
4.	<b>Working tray</b>	Removable stainless steel work surface for easy cleaning.		
5.	<b>Filter type</b>	HEPA filter with integral metal guards & frame gaskets. Supply of HEPA filter 99.997% at 0.3 micron.		
6.	<b>Primary Filter</b>	Specially designed pre filter to increase the life of HEPA filter		
7.	<b>Ergonomic tilt</b>	Exceptionally comfortable 10 deg ergonomic design improves comfort, prevents user fatigue & promotes safe working techniques.		
8.	<b>Front control panel</b>	Provided to avoid exposure of UV Light & Lamp outside, making eyes more comfortable.		
9.	<b>Front sash door</b>	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.		
10.	<b>Air velocity</b>	90 ft/min ± 10.		
11.	<b>Air volume</b>	500 cfm & above		
12.	<b>UV Light programming</b>	Available with timer		
13.	<b>Ultra violet tube light</b>	Germicidal i.e. 254 nm		
14.	<b>Electrical socket</b>	Internal socket inside the chamber,5/15 Amp		
15.	<b>Illumination of work surface</b>	Fluorescent tube light (intensity > 600 lux) provides excellent illumination for work surface & reduces operator fatigue. Fluorescent tube light in set behind front control panel.		
16.	<b>LCD Screen Display</b>	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.		
17.	<b>Sleep Mode Operation</b>	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		
18.	<b>Intelligence Alarm System</b>	Safety purpose Audio & Visual alarm for air fluctuation and for life of the HEPA filter and UV light		
19.	<b>Working Noise level</b>	Low/ should be < 65 dB		
20.	<b>Electronic / Electrical panel</b>	From clean chamber to give better contamination free results.		
21.	<b>Electrical safety</b>	Electrical components used are standard for better electrical safety for the operator.		
22.	<b>Power supply</b>	230 V ± 15%, 50 Hz ± 3%		
23.	<b>Arm Rest bar</b>	To avoid contamination from outside to inside contamination & for easy working with comfort. Secure & comfortable armrests		

		enhance your comfort during extended work sessions		
24.	<b>Drainage port</b>	Provide beneath work surface to facilitate easy & better cleaning of the interior & handling of spillage inside the chamber.		
25.	<b>Blower-Motor Assembly</b>	Dynamically & statistically balanced aluminum 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.		
26.	<b>Certificates</b>	IQ, OQ & PQ Certificates will given Calibration & Traceability certificate provided with NABL accredited. Factory tested DOP test certificate provided.		
27.	<b>Trolley (Base Stand)</b>	Provided with lockable castor wheels		
28.	<b>Certification</b>	Product must be ISO 9001 : 2015 Certified CE Marked : CE marked product GMP Certified		
29.	<b>Applicable Standards</b>	EN ISO 14971:2012/EN ISO 13485: 2012/EN 980:2008/EN 1041: 2008/EN 61010-1:2010/EN61326-1:2013/EN 12469:2000.		
30.	<b>Size</b>	4'x2'x2'		
31.	<b>Warranty</b>	Warranted for 03 years after satisfactory installation and working excluding consumable parts and accessories.		
32.	<b>Service contract clauses, including prices</b>	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;		
33.	<b>Operating manuals, service manuals, other manuals</b>	Should provide 2 sets(hardcopy and soft-copy) of:- <ul style="list-style-type: none"> <li>• User, technical and maintenance manuals to be supplied in English language along with machine diagrams;</li> <li>• List of equipment and</li> </ul>		

		<p>procedures required for local calibration and routine maintenance;</p> <ul style="list-style-type: none"> <li>• Service and operation manuals (original and copy) to be provided;</li> <li>• Advanced maintenance tasks documentation;</li> <li>• Certificate of calibration and inspection</li> </ul>		
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## 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.	<b>Size</b>	4'x2'x2' (MS Inner SS )		
2.	<b>Main body</b>	Constructed in Mild Steel with Epoxy Powder Coated		
3.	<b>Inner Surface</b>	Inner Back wall & Side wall made in stainless steel SS 304		
4.	<b>Work Surface</b>	Seamless ,Scratch-free, high quality 18 gauge stainless steel, grade 304		
5.	<b>Working tray</b>	Autoclavable & Removable stainless steel work surface for easy cleaning.		
6.	<b>LCD Display</b>	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.	<b>Sleep Mode Operation</b>	Automaticallyblowerspeedreducedupto 30%,thiswillhelp 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, you will get buzzer		
8.	<b>Intelligence Alarm System</b>	Safety purpose Audio & Visual alarm for air velocity fluctuation and for life of the HEPA filter and UV light		
9.	<b>Ultra violet tube light</b>	Germicidal i.e. 254 nm		

10.	<b>Ultra violet life meter</b>	Continuously display UV Hour on display		
11.	<b>UV Light programming</b>	Available with timer & UV Hour meter to avoid operator risk		
12.	<b>Interlocking UV</b>	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.		
13.	<b>Certification</b>	An ISO 9001 : 2015 Certified Company CE Marked : CE marked product GMP Certified Product, NSF 49 Certified and EN ISO 14971:2012/EN ISO 13485 : 2012/EN 980:2008/EN 1041 : 2008/EN 61010-1:2010/EN 61326-1:2013/EN 12469:2000		
14.	<b>Warranty</b>	Warranted for 03 years after satisfactory installation and working excluding consumable parts and accessories.		
15.	<b>Service contract clauses, including prices</b>	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.	<b>Operating manuals, service manuals, other manuals</b>	Should provide 2 sets(hardcopy and soft-copy) of:- <ul style="list-style-type: none"> <li>• User, technical and maintenance manuals to be supplied in English language along with machine diagrams;</li> <li>• List of equipment and procedures required for local calibration and routine maintenance;</li> <li>• Service and operation manuals (original and copy) to be provided;</li> <li>• Advanced maintenance tasks documentation;</li> <li>• Certificate of calibration and inspection</li> </ul>		

### 3. Autoclave Vertical

S. No.	Specifications	Requirement	Please Specify whether the quoted model/items meets the specification (Yes/No)	Specify Make and Model
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1.	<b>Application</b>	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 need to sterilize Liquids such as nutrient media and buffer solutions, Solid items such as pipettes, tubes and filters and Glassware and plastic articles		
2.	<b>Chamber</b>	Vertical loading type chamber with service basket and complying to the strictest international directives and standards equipped with <ul style="list-style-type: none"> <li>• Steam collection bottles to removes most of the steam during operation</li> <li>• Ware inlet and outlet valve</li> <li>• Drain valve for cleaning or changing with freshwater</li> <li>• Constructed with appropriate stainless steel with superior corrosion resistance to water and steam</li> <li>• High temperature and pressure resistant silicon gasket</li> <li>• Built-in analog pressure gauge</li> <li>• Manual pressure release valve</li> <li>• Wheels/casters for easy transport.</li> </ul>		
3.	<b>Chamber size/Capacity</b>	Approx. 80-120 lit		
4.	<b>Gauges</b>	Should have a water level gauge Analog gauges for measuring inner and outer steam pressure. Should have an inner temperature indicator.		
5.	<b>Chamber size/Capacity</b>	Approx. 80-120 L		
6.	<b>Display</b>	Fully Automatic PID Control $\pm 0.1^{\circ}\text{C}$ LED display for temperature and remaining time		
7.	<b>Operating Temperature and accuracy</b>	Maximum $123^{\circ}\text{C}$ Temperature Accuracy : $\pm 0.3^{\circ}\text{C}$ at $121^{\circ}\text{C}$ Must have Temperature calibration		
8.	<b>Operating pressure and gauge</b>	15 -20psi ANALOG PRESSURE GAUGE ( 0 - 40 psi pressure guage) indicating actual pressure		
9.	<b>Timer</b>	Automatic START/STOP timer		

10.	<b>Safety warnings and alarms</b>	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		
11.	<b>Accessories</b>	Perforated corrosion free baskets made up of SS 304(3-4 Nos.) that are stackable two high or even more levels, Silicone gasket		
12.	<b>Calibration certificates</b>	Certificate from ISO17025 accredited lab for temperature, pressure gauges& timer.		
13.	<b>Operation and maintenance training component</b>	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		
14.	<b>Certificates Performance and safety standards (specific to the device type);Local and/or international</b>	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		
15.	<b>Supplier/ Manufacturer</b>	Must be ISO/BIS certified for quality		
16.	<b>Service Support Contact details (Hierarchy Wise; including a toll free/landline number)</b>	Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer;		
17.	<b>Recommendations or warnings</b>	Any warning signs would be adequately displayed		

18.	<b>Warranty</b>	Warranted for 03 years after satisfactory installation and working excluding consumable parts and accessories.		
19.	<b>Service contract clauses, including prices</b>	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;		
20.	<b>Operating manuals, service manuals, other manuals</b>	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 tasks documentation; Certificate of calibration and inspection		

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

	<b>Specifications</b>	<b>Requirement</b>	<b>Please Specify whether the quoted model/items meets the specification (Yes/No)</b>	<b>Specify Make and Model</b>
1	<b>Application</b>	For incubation of organisms, such as on agar plates, 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	<b>Material of construction</b>	<ul style="list-style-type: none"> <li>• Seamless Round Corner</li> <li>• Double walled construction with complete inner chamber made of Corrosion resistant stainless steel (SS304)</li> <li>• Outer chamber should be of steel sheet finished with powder coated point Insulation to maintain desired temperature</li> <li>• Inner glass door</li> <li>• Inner chamber should be fabricated with ribs for adjusting shelves to convenient height and shelves to be supplied</li> <li>• Shelves should be made of polished stainless steel sheet as</li> </ul>		

		per chamber		
3	<b>Capacity</b>	<ul style="list-style-type: none"> <li>150- 200liters</li> </ul>		
4	<b>Temperature range</b>	<ul style="list-style-type: none"> <li>Temperature should be Microprocessor controlled</li> <li>Temperature should be Microprocessor controlled with range 1) <math>\pm 2^{\circ}</math> C Ambient to <math>70^{\circ}</math> C and 2) <math>5^{\circ}</math> C to <math>50^{\circ}</math> C</li> <li>Accuracy: <math>\pm 0.3^{\circ}</math> C</li> <li>Over-Temperature Cut-Off with audio/ visual alarm</li> <li>Low Temperature Warning alarm</li> </ul>		
5	<b>Unit</b>	<ul style="list-style-type: none"> <li>Air ventilators to be provided on both side</li> <li>The equipment should be provide with microprocessor controlled digital display</li> <li>Temperature homogeneity between top and bottom shelves should be maintained by forced circulation</li> </ul>		
6	<b>Calibration</b>	Certificate from a ISO 17025 accredited lab for 3 different temperature points		
7	<b>Operation and training component</b>	<ul style="list-style-type: none"> <li>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</li> </ul>		
8	<b>Certificates Performance and safety standards (specific to the device type);Local and/or international</b>	<ul style="list-style-type: none"> <li>Should be FDA/CE/BIS approved product. Manufacturer and Supplier should have ISO 13485 certification under ISO 9001for quality standards.</li> <li>Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements(or equivalent BIS Standard)</li> <li>Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety</li> </ul>		
9	<b>Supplier/ Manufacturer</b>	<ul style="list-style-type: none"> <li>Must be ISO certified for quality</li> </ul>		
10	<b>Service Support Contact details (Hierarchy Wise; including a toll free/landline number)</b>	<ul style="list-style-type: none"> <li>Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer;</li> </ul>		

11	<b>Recommendations or warnings</b>	<ul style="list-style-type: none"> <li>Any warning signs would be adequately displayed</li> </ul>		
12	<b>Warranty</b>	<ul style="list-style-type: none"> <li>Warranted for 03 years after satisfactory installation and working excluding consumable parts and accessories.</li> </ul>		
13	<b>Service contract clauses, including prices</b>	<ul style="list-style-type: none"> <li>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;</li> </ul>		
14	<b>Operating manuals, service manuals, other manuals</b>	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> <li>User, technical and maintenance manuals to be supplied in English language along with machine diagrams;</li> <li>List of equipment and procedures required for local calibration and routine maintenance;</li> <li>Service and operation manuals (original and copy) to be provided;</li> <li>Advanced maintenance tasks documentation;</li> <li>Certificate of calibration and inspection</li> </ul>		

**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	<b>Application</b>	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.	<b>Material construction of</b>	Full Stainless steel fabricated body with duly heat cured epoxy coating.		

3	<b>Display and counting</b>	<p>It should consist of</p> <ul style="list-style-type: none"> <li>• Digital display up to 4 digits with confirmation by audible tone.</li> <li>• It should consist of Magnifying lens (greater than 1.5X magnification with digital marking pen)</li> <li>• Accepts petri dish upto size 120 mm diameter with a centering adaptor for standard 90mm petri dish</li> <li>• Glare free viewing low energy bright LED's</li> <li>• Appropriate background viewing translucent and difficult to see colonies.</li> <li>• Zero reset button</li> </ul>		
4.	<b>Operation and training component</b>	<ul style="list-style-type: none"> <li>• 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</li> </ul>		
5	<b>Certificates Performance and safety standards (specific to the device type);Local and/or international</b>	<ul style="list-style-type: none"> <li>• Should be FDA/CE/BIS approved product.</li> <li>• 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)</li> <li>• Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety</li> </ul>		
6	<b>Supplier/ Manufacturer</b>	<ul style="list-style-type: none"> <li>• Must be ISO certified for quality</li> </ul>		
7	<b>Service Support Contact details (Hierarchy Wise; including a toll free/landline number)</b>	<ul style="list-style-type: none"> <li>• Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer;</li> </ul>		
8	<b>Recommendations or warnings</b>	<ul style="list-style-type: none"> <li>• Any warning signs would be adequately displayed</li> </ul>		
9	<b>Warranty</b>	<ul style="list-style-type: none"> <li>• Warranted for 03 years after satisfactory installation and working excluding consumable</li> </ul>		

		parts and accessories.		
10	<b>Service contract clauses, including prices</b>	<ul style="list-style-type: none"> <li>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;</li> </ul>		
11	<b>Operating manuals, service manuals, other manuals</b>	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> <li>User, technical and maintenance manuals to be supplied in English language along with machine diagrams;</li> <li>List of equipment and procedures required for local calibration and routine maintenance;</li> <li>Service and operation manuals (original and copy) to be provided;</li> <li>Advanced maintenance tasks documentation;</li> <li>Certificate of calibration and inspection</li> </ul>		

#### 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.	<b>Application</b>	This is required for the quick and safe preparation of samples before it's microbiological and chemical analysis Progressive blending adaptation to the matrix Fixed speed. Accepts all bag sizes 50 to 400 ml. 100% stainless steel chamber. 75w (power consumption reduced to 30% to 50%)		
2.	<b>Motion</b>	Variable Paddle type		
3.	<b>LCD Digital Display</b>	User friendly control, Auto-Manual Mode, Programmable time.		
5.	<b>Door</b>	Removable & Autoclavable door. Front : Glass Door.		
6.	<b>Bending Capacity</b>	From 50 – 400 ml (Sterile with or without filter)Adjustable electronic timer from 10 sec to 3 min Continuous mode available		
7.	<b>Brushless Motor</b>	No wearing parts, Less power consumption.		

8.	<b>Safety</b>	Electronic circuit breaker which stop the cycle in case of resistant samples motor protection. No access to the homogenization chamber during the operation		
9.	<b>Easy cleaning</b>	removable paddles and easy access to the stainless steel homogenizing chamber		
10.	<b>Unit</b>	<p>No vibration Patented crushing effect. Ensured efficiency whatever the sample (from 28 gm to 126 gm) Removable paddles. The easiest removable paddles on the market. Built-in waste drawer for spillage collection. 100% stainless steel chamber. Smooth surfaces and rounded corners</p> <p>Extreme Capacity</p> <p>The new « pendular » blending method is revolutionary. Power and efficiency. Progressively &amp; gently stroked samples for an optimal blending. Not “up to” but “from” 28 kgs of pressure by paddle!</p>		
11.	<b>Warranty</b>	Warranted for 03 years after satisfactory installation and working excluding consumable parts and accessories.		
12.	<b>Service contract clauses, including prices</b>	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;		
13.	<b>Operating manuals, service manuals, other manuals</b>	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> <li>• User, technical and maintenance manuals to be supplied in English language along with machine diagrams;</li> <li>• List of equipment and procedures required for local calibration and routine maintenance;</li> <li>• Service and operation manuals (original and copy) to be provided;</li> <li>• Advanced maintenance tasks documentation;</li> <li>• Certificate of calibration and inspection</li> </ul>		



**08. 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	<b>Application</b>	The water bath is for routine use in microbiology protocols as well for solubilisation with precise temperature control.		
2	<b>Material of construction</b>	<ul style="list-style-type: none"> <li>• Rounded, seamless stainless steel bath to preventing rust, chemical damage and contamination.</li> <li>• Powder coating like epoxy coating exterior for easy cleanup</li> <li>• corrosive resistant stainless steel Gabled drip free lid</li> </ul>		
3	<b>Unit</b>	<ul style="list-style-type: none"> <li>• Microprocessor controlled digital display.</li> <li>• Instrument should have lift up drip free bath cover;</li> <li>• Carrier racks should be given for flasks and test tubes racks.</li> <li>• Convenient water bath drains.</li> <li>• Water bath protective media should be there to prevent contamination and formation of algae.</li> <li>• Easy cleaning</li> </ul>		
4	<b>Temperature</b>	<ul style="list-style-type: none"> <li>• Temperature Range: Ambient to 90°C</li> <li>• Temperature Accuracy: <math>\pm 0.3</math> °C</li> <li>• Digital LED display for operating status of TEMP</li> <li>• Over-Temperature Cut-Off</li> <li>• Temperature calibration function</li> </ul>		
5	<b>Alarms</b>	<ul style="list-style-type: none"> <li>• Audible warning safety signals should be there for high/low temperature warnings</li> <li>• Low liquid level</li> </ul>		
6	<b>Calibration</b>	<ul style="list-style-type: none"> <li>• Certificate from a ISO 17025 accredited lab for 3 different temperature points</li> </ul>		
7	<b>Operation and training component</b>	<ul style="list-style-type: none"> <li>• The supplier will have to carry out successful Installation at the laboratory premises(whenever the system has to be installed) and provide on – site comprehensive training for a minimum of two scientific personnel operating the</li> </ul>		

		system till customer satisfaction		
8	<b>Certificates Performance and safety standards (specific to the device type);Local and/or international</b>	<ul style="list-style-type: none"> <li>• Should be FDA/CE/BIS approved product.</li> <li>• Manufacturer and Supplier should have ISO 13485 certification under ISO 9001for quality standards.</li> <li>• Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements(or equivalent BIS Standard)</li> <li>• Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety</li> </ul>		
9	<b>Supplier/ Manufacturer</b>	<ul style="list-style-type: none"> <li>• Must be ISO certified for quality</li> </ul>		
10	<b>Service Support Contact details (Hierarchy Wise; including a toll free/landline number)</b>	<ul style="list-style-type: none"> <li>• Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer;</li> </ul>		
11	<b>Recommendations or warnings</b>	<ul style="list-style-type: none"> <li>• Any warning signs would be adequately displayed</li> </ul>		
12	<b>Warranty</b>	<ul style="list-style-type: none"> <li>• Warranted for 03 years after satisfactory installation and working excluding consumable parts and accessories.</li> </ul>		
13	<b>Service contract clauses, including prices</b>	<ul style="list-style-type: none"> <li>• 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;</li> </ul>		
14	<b>Operating manuals, service manuals, other manuals</b>	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> <li>• User, technical and maintenance manuals to be supplied in English language along with machine diagrams;</li> <li>• List of equipment and procedures required for local calibration and routine maintenance;</li> <li>• Service and operation manuals (original and copy) to be provided;</li> <li>• Advanced maintenance</li> <li>• Certificate of calibration and inspection</li> </ul>		

**09. Analytical Balance**

S. No.	Specifications	Requirement	Please Specify whether the quoted model/items meets the specification (Yes/No)	Specify Make and Model
1	<b>Application</b>	Required to measures mass to a high degree of precision with a <b>weighing</b> capacity upto 220 g and a readability of 0.1 mg and protected by a draft shield or an enclosure.		
2	<b>Operational Requirements</b>	It should have <ul style="list-style-type: none"> <li>• Microprocessor based single pan top loading analytical balance with high accuracy and precision.</li> <li>• Reading of the weight by digital display</li> <li>• Balance with transparent case.</li> <li>• Weighing with automatic and manual start and provision for data interface.</li> </ul>		
3.	<b>Technical Specifications</b>	<ul style="list-style-type: none"> <li>• Weigh accurately up to 3rd decimal place.</li> <li>• Fully automatic time and temperature controlled internal calibration and balance should be capable to adjust itself Auto zero setting.</li> <li>• Weighing capacity up to 220g Readability 0.1 mg, Repeatability 1 mg or less.</li> </ul>		
4.	<b>Balance should have</b>	<ul style="list-style-type: none"> <li>• Fast dismantling chamber for easy cleanup</li> </ul>		
5.	<b>Environmental factors</b>	<ul style="list-style-type: none"> <li>• Safety for electromagnetic compatibility.</li> <li>• The unit shall be capable of operating in ambient temperature of 20-30 degC and relative humidity of 80%.</li> </ul>		
6.	<b>Accessories</b>	<ul style="list-style-type: none"> <li>• All necessary accessories should be provided with unit.</li> </ul>		
7.	<b>Calibration certificate</b>	Certificate from a ISO 17025 accredited lab for 3 different weights.		
8.	<b>Operation and training component</b>	<ul style="list-style-type: none"> <li>• The supplier will have to carry out successful Installation at the laboratory premises (wherever the system has to be installed) and</li> </ul>		

		provide on – site comprehensive training for a minimum of two scientific personnel operating the system till customer satisfaction		
9.	<b>Certificates Performance and safety standards (specific to the device type); Local and/or international</b>	<ul style="list-style-type: none"> <li>• Should be FDA/CE/BIS approved product.</li> <li>• Manufacturer and Supplier should have ISO 13485 certification under ISO 9001 for quality standards.</li> <li>• Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent BIS Standard)</li> <li>• Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety</li> </ul>		
10.	<b>Supplier/ Manufacturer</b>	<ul style="list-style-type: none"> <li>• Must be ISO certified for quality</li> </ul>		
11.	<b>Service Support Contact details (Hierarchy Wise; including a toll free/landline number)</b>	<ul style="list-style-type: none"> <li>• Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer;</li> </ul>		
12.	<b>Recommendations or warnings</b>	<ul style="list-style-type: none"> <li>• Any warning signs would be adequately displayed</li> </ul>		
13.	<b>Warranty</b>	<ul style="list-style-type: none"> <li>• Warranted for 03 years after satisfactory installation and working excluding consumable parts and accessories.</li> </ul>		
14.	<b>Service contract clauses, including prices</b>	<ul style="list-style-type: none"> <li>• 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;</li> </ul>		
15.	<b>Operating manuals, service manuals, other manuals</b>	<p>Should provide 2 sets (hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> <li>• User, technical and maintenance manuals to be supplied in English language along with machine diagrams;</li> <li>• List of equipment and procedures required for local calibration and routine maintenance;</li> <li>• Service and operation manuals (original and copy) to be provided;</li> <li>• Advanced maintenance tasks documentation;</li> <li>• Certificate of calibration and inspection</li> </ul>		

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

S. no.	Specifications	Requirement	Please Specify whether the quoted model/items meets the specification (Yes/No)	Specify Make and Model
1	<b>Application</b>	For storage of various biological products including, ATCC cultures, enzymes, chemicals or material testing components for a longer period of time		
2	<b>Unit</b>	<ul style="list-style-type: none"> <li>• Interior: Full stainless steel which can be easily cleaned and eliminates any possibility of cross contamination</li> <li>• Cooling Type : Direct cooling</li> <li>• Should be Vertical(Upright)type</li> <li>• Microprocessor-based</li> <li>• Frost Free</li> <li>• Refrigerant : CFC – Free</li> <li>• Easy to read, LED control panel and alarm status with integrated diagnostics</li> <li>• Doors with key lock</li> <li>• Castors for easy movability</li> </ul>		
3.	<b>Capacity</b>	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.	<b>Temperature</b>	<ul style="list-style-type: none"> <li>• Range - 10 ~ - 20 °C with temperature controller</li> <li>• Digital temperature display</li> <li>• LED Display for temperature and temperature history which can be downloaded via a USB port</li> <li>• Calibration facility</li> </ul>		
5	<b>Alarms</b>	Acoustic/visual Safety alarms for <ul style="list-style-type: none"> <li>• High/low temperature,</li> <li>• door ajar and</li> <li>• malfunction system alarms</li> </ul>		
6.	<b>Optional Accessories:</b>	Racks for 50 mm boxes (incl. dividers),Racks for 75 mm boxes (incl. dividers)		
7	<b>Voltage stabilizer</b>	Suitable and compatible voltage stabilizer		
8	<b>Calibration</b>	Certificate from an ISO 17025 accredited lab for 3 different temperature points.		
9	<b>Operation and training component</b>	<ul style="list-style-type: none"> <li>• The supplier will have to carry out successful Installation at the laboratory premises (where ever the</li> </ul>		

		system has to be installed)and provide on – site comprehensive training for a minimum of two scientific personnel operating the system till customer satisfaction		
10	<b>Certificates Performance and safety standards (specific to the device type);Local and/or international</b>	<ul style="list-style-type: none"> <li>• Should be FDA/CE/BIS approved product.</li> <li>• Manufacturer and Supplier should have ISO 13485 certification under ISO 9001for quality standards.</li> <li>• Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements(or equivalent BIS Standard)</li> <li>• Certified to be compliant with IEC 61010-1, IEC 61010-2- 40 for safety</li> </ul>		
11	<b>Supplier/ Manufacturer</b>	<ul style="list-style-type: none"> <li>• Must be ISO certified for quality</li> </ul>		
12	<b>Service Support Contact details (Hierarchy Wise; including a toll free/landline number)</b>	<ul style="list-style-type: none"> <li>• Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer;</li> </ul>		
13	<b>Recommendations or warnings</b>	<ul style="list-style-type: none"> <li>• Any warning signs would be adequately displayed</li> </ul>		
14	<b>Warranty</b>	<ul style="list-style-type: none"> <li>• Warranted for 03 years after satisfactory installation and working excluding consumable parts and accessories.</li> </ul>		
15	<b>Service contract clauses, including prices</b>	<ul style="list-style-type: none"> <li>• 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;</li> </ul>		
16	<b>Operating manuals, service manuals, other manuals</b>	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> <li>• User, technical and maintenance manuals to be supplied in English language along with machine diagrams;</li> <li>• List of equipment and procedures required for local calibration and routine maintenance;</li> <li>• Service and operation manuals (original and copy) to be provided;</li> <li>• Advanced maintenance tasks documentation;</li> <li>• Certificate of calibration and inspection</li> </ul>		

### 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	<b>Application</b>	UV-Vis The system should be capable to measure the all colorimetric based parameters in food and water samples as per FSSAI requirements including Enzyme assays, Kinetic assays and scans		
2	<b>System</b>	A fully automated spectrophotometer with double beam optics with pre-programmed applications using conventional quartz / glass/plastic cuvettes with all the required accessories.		
3	<b>Operation keys</b>	<ol style="list-style-type: none"> <li>1. Instrument should operate immediately after switch on with no warming uptime</li> <li>2. Should be automatically programmed with on-board touch screen &amp; softkeys</li> <li>3. Capable to store method with analysis:&gt; 100 method programs on the instrument, &gt;1000 results with data, evaluation results and used parameters</li> </ol>		
4.	<b>Optical Design</b>	<ul style="list-style-type: none"> <li>• Double Beam with sample and reference cuvette positions; Czerny-Turner Monochromatic/Holographic grating with sealed optics</li> <li>• Reference Compartment Should accommodate cells up to 10 mm path length as standard feature</li> </ul>		
5	<b>Light Source</b>	<ul style="list-style-type: none"> <li>• Halogen lamp for Visible range and Deuterium Lamp for UV range or Xenon Flash Lamp</li> <li>• Light source should be auto automatically selected as per wave length required.</li> </ul>		
6	<b>Detector</b>	Silicon Photodiode dual detector/PMT		
7	<b>Scan Ordinate Modes</b>	Absorbance, % Transmittance, % Reflectance		
8	<b>Resolution</b>	0.1nm or better.		
9	<b>Wavelength Range</b>	190 –1100 nm		
10	<b>Wavelength Accuracy</b>	± 0.3nm or better for entire range		

11.	<b>Wavelength Repeatability</b>	± 0.1nm or better		
12.	<b>Scanning Speed</b>	Selectable Variable wavelength scan rate 1nm/min to 3000 nm/min or better		
13.	<b>Photometric Range</b>	≥ 3.5A or better		
14.	<b>Photometric Accuracy</b>	0.5 A: ± 0.004A or better; 1A: ± 0.006A or better; 2A: ± 0.010A or better.		
15.	<b>Noise</b>	0A: ≤ 0.00006 A or better at 500 nm/700 nm		
16.	<b>Drift</b>	< 0.0005 A/hr (500 nm, 1 hour warm-up)		
17	<b>Baseline flatness</b>	± 0.0005 Abs or better		
18	<b>Application Software</b>	<p>In built Software with large LCD display should be user friendly &amp; simple for data handling with feature like easy to use report generator, 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.</p> <p>Software should have built in or provision to build :</p> <p>a. Methods:</p> <ul style="list-style-type: none"> <li>• Absorbance with one or</li> <li>• Scans, Nucleic acids, Proteins, OD 600,</li> <li>• Evaluation: via factor, standard and calibration curve</li> <li>• Dual wavelength with subtraction and division evaluation</li> </ul> <p>b. Method dependent evaluation:</p> <ul style="list-style-type: none"> <li>• Absorbance, concentration via factor and standard</li> <li>• Concentration via standard series using Linear regression, Nonlinear regression with 2nd and 3rd degree polynomials</li> <li>• Spline analysis,</li> <li>• Linear interpolation (point to point evaluation)</li> <li>• Absorbance allocation via subtraction and division</li> <li>• Ratio 260/280, 260/230, Molar concentration and total yield for nucleic acids.</li> </ul> <p><b>The software should be 21CFR part 11 compliant.</b></p>		



19	<b>Accessories and spares</b>	<ul style="list-style-type: none"> <li>• One pair each of 1 and 3 ml quartz cuvettes 10 mm path length</li> <li>• One pair each of 1 and 3 ml glass cuvettes 10 mm path length</li> <li>• Cuvette holder</li> <li>• Holmium oxide glass filters for wave length calibration.</li> <li>• NIST traceable Potassium dichromate</li> </ul>		
20	<b>Computer and printer</b>	Latest configuration factory set branded PC system with 22-23" Full HD Monitor with printer –B/W – duplex-laser-legal,A4-1200dpi-up to 21 ppm –capacity with network card		
21	<b>UPS</b>	Suitable UPS with 60 mins backup power		
22	<b>Calibration</b>	Certificate from an ISO 17025 accredited lab spectral calibration.		
23	<b>Compliance</b>	<b>IQOQPQ</b> of instrument and Software should be provided along with document		
24	<b>Operation and training component</b>	<ul style="list-style-type: none"> <li>• 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</li> </ul>		
25	<b>Certificates Performance and safety standards (specific to the device type);Local and/or international</b>	<ul style="list-style-type: none"> <li>• Should be FDA/CE/BIS approved product.</li> <li>• Manufacturer and Supplier should have ISO 13485 certification under ISO 9001for quality standards.</li> <li>• Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements(or equivalent BIS Standard)</li> <li>• Certified to be compliant with IEC 61010- 1, IEC 61010-2-40 for safety</li> </ul>		
26	<b>Supplier/ Manufacturer</b>	<ul style="list-style-type: none"> <li>• Must be ISO certified for quality</li> </ul>		
27	<b>Service Support Contact details (Hierarchy Wise; including a toll free/landline number)</b>	<ul style="list-style-type: none"> <li>• Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer;</li> </ul>		
28	<b>Recommendation s or warnings</b>	<ul style="list-style-type: none"> <li>• Any warning signs would be adequately displayed</li> </ul>		

29	<b>Warranty</b>	<ul style="list-style-type: none"> <li>Warranted for 03 years after satisfactory installation and working excluding consumable parts and accessories.</li> </ul>		
30	<b>Service contract clauses, including prices</b>	<ul style="list-style-type: none"> <li>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;</li> </ul>		
31	<b>Operating manuals, service manuals, other manuals</b>	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> <li>User, technical and maintenance manuals to be supplied in English language along with machine diagrams;</li> <li>List of equipment and procedures required for local calibration and routine maintenance;</li> <li>Service and operation manuals (original and copy) to be provided;</li> <li>Advanced maintenance tasks documentation;</li> <li>Certificate of calibration and inspection</li> </ul>		

## 12. Binocular Microscope

S no.	Specifications	Requirement	Please Specify whether the quoted model/items meets the specification(Yes/No)	Specify Make and Model
1	<b>Application</b>	A System complete with illumination system is required. For view of individual cells, even living ones with high magnification microscope using 2 eye lenses to reduce the eyestrain		
2	<b>Body</b>	<ul style="list-style-type: none"> <li>Body-Single mold sturdy stable base stand, inclined Binocular body 30 °,360° rotatable head with focus adjustment controls.</li> <li>A durable textured acid resistant finish</li> <li>All optical parts including objectives, eye pieces and prisms should have anti- reflective coating which also gives anti- fungal property.</li> <li>All metallic parts should be corrosion- proof, acid proof and stain-proof.</li> </ul>		

3.	<b>Eye piece</b>	<ul style="list-style-type: none"> <li>• -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)</li> <li>• Achromatic, wide field, 10 x with inbuilt pointer.</li> <li>• 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.</li> </ul>		
3.	<b>Optical system</b>	<ul style="list-style-type: none"> <li>• Optical system should be infinity corrected.</li> <li>• Built-in LED light source with white light with intensity control and LED life of more than 10, 000Hrs.</li> </ul>		
4.	<b>Objective</b>	<ul style="list-style-type: none"> <li>• -Parfocal, antifungal coated 4x, 10x, 40x and 100x (oil immersion) with semi planer achromatic correction.</li> <li>• Objective should be well centered even if their position on turret is changed.</li> <li>• 10x and 40x objectives should have numerical apertures of 0.25 and 0.65 respectively.</li> <li>• 100x should have numerical aperture of 1.25 and should be of oil immersion.</li> <li>• Unbreakable containers to be provided for storing the objectives.</li> <li>• All objectives should be wide field, achromatic and par focal.</li> </ul>		
5.	<b>Nose piece</b>	<ul style="list-style-type: none"> <li>• Backward tilted revolving nose piece suitable to accommodate four objectives with clickstop</li> <li>• . 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 &amp; fungal proof metallic/ebonite caps.</li> </ul>		
6	<b>Focusing:</b>	<ul style="list-style-type: none"> <li>• . Coaxial coarse and fine focusing knob, capable of smooth, fine focusing movement</li> </ul>		

		sensitivity; minimum: 300 micron; focusing stop for slide safety.		
7	<b>Stage</b>	<ul style="list-style-type: none"> <li>• Stage uniformly horizontal, mechanical stage having dimensions of length 140 mm (+/- 20mm) with fine Vernier graduations (minimum reading accuracy of 0.1mm).</li> <li>• It should be designed with convenient sub-stage vertical coaxial adjustment for slide manipulation.</li> <li>• The stage should have ball-bearing arrangement to allow smooth travel in transverse directions i.e. 80 mm (+/- 5mm) and front to back direction, 50mm (+/- 5mm).</li> </ul>		
8.	<b>Sub-stage condenser</b>	<ul style="list-style-type: none"> <li>• Abbe-type condenser with numerical aperture (N.A.) 1.25 focusable with rack and pinion arrangement incorporating a spherical lens and an iris-diaphragm</li> </ul>		
9.	<b>Sub-stage illuminator</b>	<ul style="list-style-type: none"> <li>• The system should have a build-in variable light source(Illuminator).</li> <li>• This light source should have a 20 W, 6 V Halogenlamps.</li> <li>• The system should be provided with a step down transformer and an on-off switch and intensity control.</li> <li>• The lamp should be provided with a lamp socket which has the facility or easy replacement of the bulb</li> </ul>		
10.	<b>Power supply &amp; protection</b>	<ul style="list-style-type: none"> <li>• Voltage 220 V AC, 50Hz.should have one on-off power switch</li> <li>• A plano-concave mirror in fork mounting should be supplied which would be attachable to the base for field use when power is not available.</li> <li>• Should have over-charging cut-off with visual symbol</li> </ul>		
11	<b>Battery backup</b>	<ul style="list-style-type: none"> <li>• Minimum 1Hour</li> </ul>		
12	<b>Operating and storage conditions</b>	<ul style="list-style-type: none"> <li>• Capable of operating continuously in ambient temperature of 10 to 50 ° C and relative humidity of 15 to 90% in ideal circumstances.</li> <li>• Storage condition: Capable of being stored continuously in</li> </ul>		

		ambient temperature of 0 to 50 °C and relative humidity of 15 to 90%		
13	<b>Manual Accessories</b>	<ul style="list-style-type: none"> <li>Working manual should be provided with each microscope.</li> <li>Immersion oil 25 ml x2</li> <li>lens tissue paper 2 rolls or boxes)</li> <li>Lens cleaning solution (100ml)</li> <li>One anti-static cleaning brush.</li> <li>The unit shall be capable of being stored continuously in ambient temperature of 0 -50 deg C and relative humidity of 15-90%.</li> </ul>		
14.	<b>Digital camera</b>	<ul style="list-style-type: none"> <li>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).</li> </ul>		
15	<b>Certificates Performance and safety standards (specific to the device type);Local and/or international</b>	<ul style="list-style-type: none"> <li>Should be FDA/CE/BIS approved product.</li> <li>Manufacturer and Supplier should have ISO 13485 certification under ISO 9001for quality standards.</li> <li>TVU Cert</li> <li>Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements(or equivalent BIS Standard)</li> <li>Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety</li> </ul>		
16	<b>Supplier/ Manufacturer</b>	<ul style="list-style-type: none"> <li>Must be ISO certified for quality</li> </ul>		
17	<b>Service contract clauses, including prices</b>	<ul style="list-style-type: none"> <li>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;</li> </ul>		
18	<b>Operating manuals, service manuals, other manuals</b>	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> <li>User, technical and maintenance manuals to be supplied in English</li> </ul>		

		<p>language along with machine diagrams;</p> <ul style="list-style-type: none"> <li>List of equipment and procedures required for local calibration and routine maintenance;</li> <li>Service and operation manuals (original and copy) to be provided;</li> <li>Advanced maintenance tasks documentation;</li> <li>Certificate of calibration and inspection</li> </ul>		
19	<b>Warranty</b>	<ul style="list-style-type: none"> <li>Warranted for 03 years after satisfactory installation and working excluding consumable parts and accessories.</li> </ul>		
21	<b>Operation and maintenance training</b>	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(Yes/No)	Specify Make and Model
1.	<b>Application</b>	It is use in determining mold counts (is used mold fibres and spores) in tomato products and for mold counting in food quality control applications for other fruit based preparations and <b>mold</b> mycelia in butter and cream..		
2.	<b>Counting chamber</b>	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. Facilities for calibration of microscope		
3.	<b>Eyepiece micrometer</b>	Ruled into squares (grid), each of which is equal to 1/6 of the diameter of the eyepiece diaphragm opening		
4.	<b>Cover slips</b>	Thin 28mm x 33mm x 0.5mm 2 Nos Thick 28mm x 33mm x 1.0mm 2 Nos		

5.	<b>Certificates Performance and safety standards (specific to the devicetype);Local and/orinternational</b>	<ul style="list-style-type: none"> <li>• Should be FDA/CE/BIS approved product.</li> <li>• Manufacturer and Supplier should have ISO 13485 certification under ISO 9001for quality standards.</li> <li>• TVU Cert</li> </ul>		
6.	<b>Service contract clauses, including prices</b>	<ul style="list-style-type: none"> <li>• List of all spares and accessories (including minor) with part numbers and price, required;</li> </ul>		
7.	<b>Demonstration and training</b>	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.	<b>Certificates Performance and safety standards (specific to the device type);Local and/or international</b>	<ul style="list-style-type: none"> <li>• Should be FDA/CE/BIS approved product.</li> <li>• Manufacturer and Supplier should have ISO 13485 certification under ISO 9001for quality standards.</li> </ul>		
9.	<b>Warranty</b>	<ul style="list-style-type: none"> <li>• Warranted for 03 years after satisfactory installation and working excluding consumable parts and accessories.</li> </ul>		

#### 14. Refrigerated Centrifuge

S. No.	Specifications	Requirement	Please Specify whether the quoted model/items meets the specification (Yes/No)	Specify Make and Model
1.	<b>Application</b>	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.	<b>Base unit</b>	<ul style="list-style-type: none"> <li>• Table top centrifuge with maintenance free brushless motor and have low access height</li> <li>• CFC free refrigerant</li> <li>• LCD Digital Display of time, speed and Temperature and run conditions</li> <li>• Compatible with all fixed angle and swinging bucket rotors</li> <li>• <b>Automatic rotor recognition facility</b></li> </ul>		

		<ul style="list-style-type: none"> <li>• Automatic imbalance detection and cut-off</li> <li>• Should be programmable with easy preset programs for fast temperature for pre-cooling and short spin.</li> <li>• Should have motorized lid lock system</li> </ul>		
3.	<b>Temperature range</b>	<ul style="list-style-type: none"> <li>• -5°C to 40°C, 4°C should be maintained at highest speed</li> </ul>		
4.	<b>Speed</b>	<ul style="list-style-type: none"> <li>• Maximum speed: 6000 to 8000xg RCF with 6 x 50 mL Fixed angle rotor or better</li> </ul>		
5.	<b>Rotors</b>	<ol style="list-style-type: none"> <li>1. <b>Fixed Angle Rotor</b> for 650 ml Falcon tube with 8 adapters for 15 mL conical bottom culture tubes/falcon/oakridge</li> <li>2. <b>Rotor for 1.5-2.0 mL</b> Eppendorf tubes(24 places or better) and <b>adaptors</b> for 0.2and 0.5 mL tubes</li> <li>3. <b>Deep-well micro plates</b> rotor (Four96 well plates</li> </ol>		
6.	<b>Centrifuge tubes</b>	<ul style="list-style-type: none"> <li>• Suitable 15 mL auto-clavable screw capped tubes – 1 Packet/500Pc</li> <li>• Suitable 50 mL auto-clavable screw capped tubes - 1 Packet/500Pc</li> </ul>		
7.	<b>Power requirement</b>	<ul style="list-style-type: none"> <li>• 220 v to 240 v -50 Hz If a voltage stabilizer is required, it should be supplied along with the unit</li> </ul>		
8.	<b>Voltage stabiliser</b>	<ul style="list-style-type: none"> <li>• Suitable voltage stabilizer to be provided</li> </ul>		
9.	<b>Certificates Performance and safety standards (specific to the device type);Local and/or international</b>	<ul style="list-style-type: none"> <li>• Should be FDA/CE/BIS approved product.</li> <li>• Manufacturer and Supplier should have ISO 13485 certification under ISO 9001for quality standards.</li> <li>• Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements(or equivalent BIS Standard)</li> <li>• Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety</li> </ul>		
10.	<b>Supplier/ Manufacturer</b>	<ul style="list-style-type: none"> <li>• Must be ISO certified for quality</li> </ul>		
11.	<b>Service contract clauses, including prices</b>	<ul style="list-style-type: none"> <li>• 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;</li> </ul>		
12.	<b>Operating manuals, service manuals, other manuals</b>	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> <li>• User, technical and maintenance manuals to be supplied in English language along with machine diagrams;</li> <li>• List of equipment and procedures</li> </ul>		



		<p>required for local calibration and routine maintenance;</p> <ul style="list-style-type: none"> <li>• Service and operation manuals (original and copy) to be provided; Advanced maintenance tasks documentation;</li> <li>• Certificate of calibration and inspection</li> </ul>		
13.	<b>Warranty</b>	<ul style="list-style-type: none"> <li>• Warranted for 03 years after satisfactory installation and working excluding consumable parts and accessories.</li> </ul>		
14.	<b>Operation and maintenance training</b>	<p>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.</p>		

#### 15. BOD Incubator

S. No.	Specifications	Requirement	Please Specify whether the quoted model/items meets the specification (Yes/No)	Specify Make and Model
1.	<b>Application</b>	<p>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 cells.</p>		
2.	<b>Double walled modular structure with 3” thick PUF insulation</b>	<p>i) Outer wall: Powder coated steel sheet with inner seamless round corner  ii) Inner wall: Stainless steel* 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 Grade X07Cr18Ni9 of IS 6911 : 1992 or equivalent)  iii) Perforated Stainless Steel* Partition tray (6nos.)</p>		

3.	<b>Doors</b>	<p>Double door type</p> <ul style="list-style-type: none"> <li>• Inner Door: Full view inner acrylic door with aluminum channel boundary, closes on a resilient gasket and permits view of the specimens (inside the Incubator), without disturbing the thermal conditions inside the chamber.</li> <li>• Interior illumination</li> <li>• Outer Door: Powder coated steel sheet with resin baked finish</li> </ul>		
4.	<b>Capacity</b>	<ul style="list-style-type: none"> <li>• 300-400Litres</li> </ul>		
5.	<b>Temperature Range</b>	<ul style="list-style-type: none"> <li>• 5°C to 60°C with digital controller,</li> <li>• Temperature increments 0.1°C</li> </ul>		
6.	<b>Temperature Control Accuracy</b>	<ul style="list-style-type: none"> <li>• <math>\pm 0.3</math> °C</li> </ul>		
7.	<b>Distribution Accuracy/uniformity</b>	<ul style="list-style-type: none"> <li>• <math>\pm 1</math> °C or better (at37°C).</li> </ul>		
8.	<b>Temperature display</b>	<ul style="list-style-type: none"> <li>• Microprocessor based Digital display of temperature and control along with calibration certificate by ISO17025 accredited agency.</li> <li>• Temperature recorder for inner chamber with maintenance free battery backup and auto charging of battery</li> </ul>		
9.	<b>Air circulation</b>	<ul style="list-style-type: none"> <li>• With two completely in built motors along with fan to keep the temperature uniform throughout the chamber</li> </ul>		
10.	<b>Heat up time &amp; Cool Down time</b>	<ul style="list-style-type: none"> <li>• 30 min. up to 60 ° C without load.</li> <li>• 40 min. up to + 5 ° C without load</li> </ul>		
11.	<b>Timer</b>	<ul style="list-style-type: none"> <li>• 0 to 24 hrs X 7 days cyclic ON /OFF timer for illuminating port</li> </ul>		
12.	<b>Safety Alarms</b>	<p>Provision for audio-visual alarm to indicate</p> <ul style="list-style-type: none"> <li>• Door opening after 2min.</li> <li>• Self -diagnosis function including overheat</li> <li>• Prevention and overcurrent Protection</li> </ul>		
13.	<b>Computer Interface</b>	RS 485 / RS232 interface for multiple & single communication port		
14.	<b>Voltage stabilizer</b>	Automatic Stabilizer, 4 KVA with TDR (3minutes) electronic type		
15.	<b>Documents Certificates Performance and safety standards (specific to the device type);Local and/or</b>	<ul style="list-style-type: none"> <li>• Should be FDA/CE/BIS approved product.</li> <li>• Manufacturer and Supplier should have ISO 13485 certification under ISO 9001for quality standards.</li> <li>• Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements(or equivalent BIS Standard)</li> </ul>		

	<b>international</b>	<ul style="list-style-type: none"> <li>• Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety</li> <li>• Complete with IQ, OQ, PQ, Documents, Operations and Maintenance manuals</li> </ul>		
16.	<b>Supplier/ Manufacturer</b>	<ul style="list-style-type: none"> <li>• Must be ISO certified for quality</li> </ul>		
17.	<b>Service contract clauses, including prices</b>	<ul style="list-style-type: none"> <li>• 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;</li> </ul>		
18.	<b>Operating manuals, service manuals, other manuals</b>	<p>Should provide 2 sets(hardcopy and soft- copy) of:-</p> <ul style="list-style-type: none"> <li>• User, technical and maintenance manuals to be supplied in English language along with machine diagrams;</li> <li>• List of equipment and procedures required for local calibration and routine maintenance;</li> <li>• Service and operation manuals (original and copy) to be provided;</li> <li>• Advanced maintenance tasks documentation;</li> <li>• Certificate of calibration and inspection</li> </ul>		
19.	<b>Warranty</b>	<ul style="list-style-type: none"> <li>• Warranted for 03 years after satisfactory installation and working excluding consumable parts and accessories.</li> </ul>		
21.	<b>Operation maintenance&amp; training</b>	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	Universal manifold for Microbiological		

	(SS)	<p>applications, compatible to Reusable and disposable funnels, each part autoclavable. For microbiology: Autoclavable funnels (100mL)</p> <ul style="list-style-type: none"> <li>• MOC: SS 316L, all parts autoclavable</li> <li>• Dimensions (W*L*H) in mm: 168 x 433 x 117</li> <li>• Different filtration heads fit to both reusable and disposable filtration devices</li> <li>• Easy to prevent biofilms <ul style="list-style-type: none"> <li>○ easy access to all inner parts for efficient cleaning</li> <li>○ each component can be removed by hand and autoclaved</li> </ul> </li> <li>• Quick-fit connections for the vacuum tubing</li> <li>• Low height for ease of use in laminar flow hoods</li> <li>• 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</li> </ul>		
3	Filter Forceps	<ul style="list-style-type: none"> <li>• Beveled, unserrated tips to protect delicate membrane surfaces</li> <li>• May be sterilized by autoclaving or flame-sterilization</li> </ul> <p>plastic support, MOC – SS.</p>		
4	Vacuum Pump	<p>Vacuum Pump - Compact &amp; modular, Maintenance-free technology, must directly connect to the filtration assembly, Compatible to be placed in LAF/Biosafety cabinet.</p> <ul style="list-style-type: none"> <li>• Flow rate :3.8 to 4.0 L/min</li> <li>• Dimensions (W*L*H) in cm: 19.6 * 16.8 * 22.2</li> <li>• 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</li> <li>• Complies with ISO Standard 8199 guidelines for microbiological analysis (Maximum vacuum delivered does not exceed 700mBar)</li> <li>• Noise level less than 60dB.</li> </ul>		
5	Membrane Filters	<p>Sterile filters, 0.45micron, 47mm Diameter, White gridded, Mixed ester of cellulose.</p>		

## 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.	<b>Application</b>	For research with a comprehensive range of features and functions, making it suitable for general laboratory, QC and GLP based applications.		
2.	<b>Unit</b>	<b>Consisting of</b> 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 resolution	± 0.01 pH		
5.	Mv	<ul style="list-style-type: none"> <li>Range 0 - ±1999</li> <li>Accuracy ±1mV</li> <li>Resolution 1mV</li> </ul>		
6.	Temperature Compensation	0 to 100 ° C with ATC		
7.	Temperature	Range -10 to +105°C Resolution 0.1°C Accuracy ±0.5°C ATC range 0 to 100°		
8.	Calibration Points	<ul style="list-style-type: none"> <li>Should have 3 stage calibration with autobuffer recognition</li> <li>NIST traceable buffer set 500 ml each (pH 4.0, 7.0 &amp; 9.0).</li> </ul>		
9.	Alarm	<ul style="list-style-type: none"> <li>Calibration reminder interval (1 to 999hrs)</li> </ul>		
10.	Temperature Compensation	<ul style="list-style-type: none"> <li>Automatic</li> </ul>		
11.	Display	<ul style="list-style-type: none"> <li>Backlit blue LCD with operation icon</li> <li>digital display with 0.001 pH unit readability</li> </ul>		
12.	Accessories	<ul style="list-style-type: none"> <li>Extra Electrode</li> <li>NIST Standard buffer solution (pH 4.0, 7.0, 10.01 x 500ml for each bottle)</li> <li>standard electrode holder</li> <li>Ac /DC Adaptor.</li> </ul>		
13.	Data storage & Output	Data storage facility and record maximum and minimum value. <ul style="list-style-type: none"> <li>RS.232C output and supply Data</li> </ul>		

		connector cable.		
14.	Documents Certificates Performance and safety standards (specific to the device type);Local and/or international	<ul style="list-style-type: none"> <li>• Manufacturer and Supplier should have ISO 13485 certification under ISO 9001 for quality standards.</li> <li>• Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent BIS Standard)</li> <li>• Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety</li> <li>• Complete with IQ, OQ, PQ, Documents, Operations and Maintenance manuals</li> </ul>		
15.	Supplier/ Manufacturer	<ul style="list-style-type: none"> <li>• Must be ISO certified for quality</li> </ul>		
16.	Service contract clauses, including prices	<ul style="list-style-type: none"> <li>• 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;</li> </ul>		
17.	Operating manuals, service manuals, other manuals	Should provide 2 sets (hardcopy and soft-copy) of:- <ul style="list-style-type: none"> <li>• User, technical and maintenance manuals to be supplied in English language along with machine diagrams;</li> <li>• List of equipment and procedures required for local calibration and routine maintenance;</li> <li>• Service and operation manuals (original and copy) to be provided;;</li> <li>• Certificate of calibration and inspection</li> </ul>		
18.	<b>Warranty</b>	<ul style="list-style-type: none"> <li>• Warranted for 03 years after satisfactory installation and working excluding consumable parts and accessories.</li> </ul>		

#### 18. Fumigator

Sl. No.	Specifications	Requirement	Please Specify whether the quoted model/items meets the specification (Yes/No)	Specify Make and Model
1.	<b>Capacity</b>	<ul style="list-style-type: none"> <li>• 5 liters with easy cleaning facility</li> </ul>		
2.	<b>Material of construction</b>	<ul style="list-style-type: none"> <li>• Body should be compact, durable, leak proof and made of stainless steel/heavy duty plastic</li> </ul>		

3.	<b>Particle size</b>	<ul style="list-style-type: none"> <li>• It should produce aerosols with particle size of less than 5microns</li> <li>• The blower head should be rust proof inert to Formaldehyde, <math>KMnO_4</math>, <math>H_2O_2</math> and deliver aerosols uniformly.</li> </ul>		
4.	<b>Unit</b>	<ul style="list-style-type: none"> <li>• It should be compatible with all disinfectant solutions usual concentration.</li> <li>• It should be compatible with maximum pH range (both acid and alkali).</li> <li>• The equipment should be of good quality and conform to national/international standards.</li> </ul>		
5.	<b>Power supply</b>	<ul style="list-style-type: none"> <li>• The machine should operate on 220 +- 10 volts, 50 Hz, single phase, A.C</li> <li>• Provided with Cable should be atleast 5 meters in length, ISI marked.</li> </ul>		
6.	<b>Operation</b>	<ul style="list-style-type: none"> <li>• The discharge rate should not be less than 1Liter/25minutes.</li> <li>• 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).</li> </ul>		
7.	<b>Operation and training component</b>	<ul style="list-style-type: none"> <li>• 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</li> </ul>		
8.	<b>Warranty</b>	<ul style="list-style-type: none"> <li>• Warranted for 03 years after satisfactory working excluding consumable parts and accessories.</li> </ul>		
9.	Service contract clauses, including prices	<ul style="list-style-type: none"> <li>• 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;</li> </ul>		
10.	Operating manuals, service manuals, other manuals	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> <li>• User, technical and maintenance manuals to be supplied in English language along with machine diagrams;</li> <li>• Service and operation manuals (original and copy) to be provided;</li> </ul>		

		<ul style="list-style-type: none"> <li>Advanced maintenance tasks documentation;</li> </ul>		
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### 19. UV Viewing Cabinet

	Specifications	Requirement	Please Specify whether the quoted model/items meets the specification (Yes/No)	Specify Make and Model
1.	<b>Application</b>	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.	<b>Unit</b>	<ul style="list-style-type: none"> <li>User-safe, self-contained chamber with Convenient handling</li> <li>Clear <b>viewing</b> window (open/close via hinged door) through button operation for each of two UV tubes</li> <li>Homogeneous illumination of chamber</li> </ul>		
3.	<b>Viewport</b>	<ul style="list-style-type: none"> <li>Soft rubber viewport and contrast control filter that absorbs UV energy to protect the eyes</li> </ul>		
4.	<b>UV tubes</b>	<p>Two UV tubes for illumination each 8W</p> <ul style="list-style-type: none"> <li><b>Long-wave UV light 366nm</b></li> <li><b>Short-wave UV light 254nm</b></li> </ul>		
5.	<b>Safety timer</b>	User safety through tilt sensor and timer (automatic switch-off after 10 min)		
6.	<b>Operation and training component</b>	<ul style="list-style-type: none"> <li>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</li> </ul>		
7.	Certificates Performance and safety standards (specific to the device type); Local and/or international	<ul style="list-style-type: none"> <li>Should be FDA/CE/BIS approved product.</li> <li>Manufacturer and Supplier should have ISO 13485 certification under ISO 9001 for quality standards.</li> <li>Electrical safety conforms to the standards for electrical safety IEC 60601-General requirements (or equivalent BIS Standard)</li> </ul> <p>Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety</p>		



8.	Supplier/ Manufacturer	<ul style="list-style-type: none"> <li>• Must be ISO certified for quality</li> </ul>		
9.	Service Support Contact details (Hierarchy Wise; including a toll free/landline number)	<ul style="list-style-type: none"> <li>• Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/ad-hoc) to be declared by the manufacturer;</li> </ul>		
10.	Recommendati on s or warnings	<ul style="list-style-type: none"> <li>• Any warning signs would be adequately displayed</li> </ul>		
11.	<b>Warranty</b>	<ul style="list-style-type: none"> <li>• Warranted for 03 years after satisfactory working excluding consumable parts and accessories.</li> </ul>		
12.	Service contract clauses, including prices	<ul style="list-style-type: none"> <li>•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;</li> </ul>		
13.	Operating manuals, service manuals, other manuals	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> <li>•User, technical and maintenance manuals to be supplied in English language along with machine diagrams;</li> <li>•Service and operation manuals (original and copy) to be provided;</li> <li>•Advanced maintenance tasks documentation;</li> </ul>		

## 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 develop so to achieve an aerobic atmospheric condition inside the Jar in less than 1minute. Create atmosphere suitable for the culture of anaerobicas 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 like combination of CO <sub>2</sub> , N <sub>2</sub> or Co <sub>2</sub> , N <sub>2</sub> with 5 % H <sub>2</sub> can also be connect.		
2.	<b>Dimensions ( W /D / H )</b>	200 mm X 400 mm X 350 mm		
3.	<b>Power Supply</b>	230 V		
4.	<b>Gas Supplies</b>	N2 and ANO2 (CO <sub>2</sub> :H <sub>2</sub> :N <sub>2</sub> )(10:5:85)		
5.	<b>Pressure</b>	150 kg / cm <sup>2</sup>		
6.	<b>Touch Screen Display</b>	HMI Type L 90 mm x D 50 mm		
7.	<b>Salient Features</b>	<ul style="list-style-type: none"> <li>• Quick &amp; Convenient Solution</li> <li>• Anaerobic Condition achieved within 1Minute</li> <li>• Touch Screen LCD Display</li> <li>• User Friendly</li> <li>• Simple Assembly with Alternative Users Option</li> </ul>		
8.	<b>Warranty</b>	Warranted for 03 years after satisfactory installation and working excluding consumable parts and accessories.		
9.	<b>Service contract clauses, including prices</b>	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.	<b>Operating manuals, service manuals, other manuals</b>	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> <li>• User, technical and maintenance manuals to be supplied in English language along with machine diagrams;</li> <li>• List of equipment and procedures required for local calibration and routine maintenance;</li> <li>• Service and operation manuals(original and copy) to be provided;</li> <li>• Advanced maintenance tasks documentation;</li> <li>• Certificate of calibration and</li> </ul>		

		inspection		
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## 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.	<b>Application</b>	For drying glassware and also for conditioning of heat sensitive media and to provide an optimal, homogeneous, temperature uniformity and stability to ensure drying is complete		
2.	<b>Material of construction</b>	<ul style="list-style-type: none"> <li>• 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</li> <li>• Facility for adjustable shelves, 10 removable shelves to be provided.</li> <li>• With internal lighting facility, Insulated door fitted with heavy hinges, mechanical doorlock. Glass window may be provided to view samples.</li> </ul>		
3.	<b>Capacity</b>	<ul style="list-style-type: none"> <li>• Approx. 200liters</li> </ul>		
4.	<b>Temperature range</b>	<ul style="list-style-type: none"> <li>• Temperature should be microprocessor controlled</li> <li>• It should be Ambient +5°C to 250°C with temperature setting accuracy <math>\pm 0.5</math> °C with forced air circulation for temperature uniformity</li> <li>• Separate PT 100 sensor and display for temperature (LED)</li> <li>• Safety alarms with Auto cut off system</li> </ul>		

5.	<b>Unit</b>	<ul style="list-style-type: none"> <li>• Air ventilators to be provided on both side</li> <li>• The equipment should be provide with microprocessor controlled digital display</li> <li>• Temperature homogeneity between top and bottom shelves should be maintained by forced circulation</li> </ul>		
6.	<b>Calibration</b>	<ul style="list-style-type: none"> <li>• Certificate from a ISO17025 accredited lab for 3 different temperature points</li> </ul>		
7.	<b>Power supply</b>	All electrical peripherals required for smooth functioning e.g. voltage stabilizers should be provided.		
8.	<b>Accessories</b>	<ul style="list-style-type: none"> <li>• Should have all the accessories required for the functioning of the equipment.</li> </ul>		
9.	<b>Certificates Performance and safety standards (specific to the device type);Local and/or international</b>	<ul style="list-style-type: none"> <li>• Should be FDA/CE/BIS approved product.</li> <li>• Manufacturer and Supplier should have ISO 13485 certification under ISO 9001for quality standards.</li> <li>• Electrical safety conforms to the standards for electrical safety IEC 60601-General requirements(or equivalent BIS Standard)</li> <li>• Certified to be compliant with IEC 61010-1, IEC61010-2-40 for safety</li> </ul>		
10.	<b>Supplier/ Manufacturer</b>	<ul style="list-style-type: none"> <li>• Must be ISO certified for quality</li> </ul>		
11.	<b>Service Support Contact details (Hierarchy Wise; including a toll free/landline number)</b>	<ul style="list-style-type: none"> <li>• Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer;</li> </ul>		
12.	<b>Recommendations or warnings</b>	<ul style="list-style-type: none"> <li>• Any warning signs would be adequately displayed</li> </ul>		
13.	<b>Warranty</b>	<ul style="list-style-type: none"> <li>• Warranted for 03 years after satisfactory working excluding consumable parts and accessories.</li> </ul>		
14.	<b>Service contract clauses, including prices</b>	<ul style="list-style-type: none"> <li>• List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in</li> </ul>		

		future after guarantee/warranty period should be attached;		
15.	<b>Operating manuals, service manuals, other manuals</b>	Should provide 2 sets(hardcopy and soft-copy) of:- <ul style="list-style-type: none"> <li>• 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;</li> <li>• Advanced maintenance tasks documentation;</li> </ul>		

## 22. Micropipettes (\*6 No's)

Sno.	Specifications	Requirement	Please Specify whether the quoted model/items meets the specification (Yes/No)	Specify Make and Model
1	<b>Material</b>	Liquid handling equipment, Fully Autoclavable		
2	<b>Capacity /Volume</b>	20-200 micro liter (Variable) 100-1000 micro liter (Variable ) 1-10ml (Variable) *2 eachx3=6		
3	<b>Feature</b>	<ul style="list-style-type: none"> <li>• Single–channel/manual</li> <li>• Volume lock to prevent drifting</li> </ul>		
4	<b>Accessory</b>	Tips, Tip boxes		
5	<b>Calibration</b>	Certificate from ISO17025 accredited lab for 3 points		
6	<b>Warranty</b>	03 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.	<b>Capacity</b>	45 litres or above		
2.	<b>Display</b>	LCD/LED		
3.	<b>Chamber Material</b>	Single mold 304 grade joint less stainless steel		
4.	<b>Processor</b>	microprocessor		
5.	<b>Heating type</b>	Air/Direct Heat		

6.	<b>No. of shelves</b>	2-3 minimum		
7.	<b>Temp. control range</b>	0 - 50°C		
8.	<b>Ambient temp. range</b>	5 °C above ambient to 50 °C		
9.	<b>Temp. control accuracy</b>	± 0.1		
10.	<b>Temp. uniformity</b>	± 0.3		
11.	<b>CO<sub>2</sub> sensor</b>	IR sensor		
12.	<b>CO<sub>2</sub> control range</b>	0.1-20%		
13.	<b>CO<sub>2</sub> stability</b>	± 0.1%		
14.	<b>CO<sub>2</sub> recovery time</b>	0-10 min		
15.	<b>CO<sub>2</sub> tank switch/alarm</b>	Yes		
16.	<b>Temp. recovery</b>	5-15 min		
17.	<b>Humidity</b>	95±5%		
18.	<b>Humidity recovery</b>	10-20 min		
19.	<b>Alarm</b>	Audio & visual		
20.	<b>Stacking</b>	Possible		
21.	<b>Cylinders</b>	CO <sub>2</sub> cylinders (2 nos.); Capacity- 9-10kg; Purity- 98.00%		
22.	<b>Communication port</b>	Yes		
23.	<b>Power</b>	AC 230V/6A, 50Hz		
24.	<b>Power consumption</b>	500-600W (max.); 50-100W at 37°C		
25.	<b>Disinfection</b>	Automatic system will be preferred		
26.	<b>Calibration</b>	Certificate from NABL accredited lab for 3 points		
27.	<b>Warranty</b>	03 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
	<b>Material Stainless steel</b>		
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 temperature controls Refrigerator +2 <sup>0</sup> to +8 <sup>0</sup> C		
	Audio alarm	Alarm is door is ajar for long		
4	Inner body	Rust Free Material		
5	Refrigerant	CFC / HCFC Free		
6	Frost Free			
7	Door Lock & Interior light			
8	Same Temperature: Top to Bottom			
9	Microprocessor based Temperature Controller with Digital Display			
10	In built Voltage Stabilizer High/Low cut with timer delay			
11	Door Glass Heater for special heated front glass that enhances visibility and prevents unhygienic condensation			
12	Warranty: 03years and Life time on motor			

**25. Microbiological Media and Consumables**

Sl. No.	MEDIA(Quote should be for unit pack)	Yes/No
1	Acetate Agar	
2	Baird Parker Agar	
3	Bismuth Sulphite Agar	
4	Brain Heart Infusion Broth	
5	Brilliant Green Lactose Bile Broth 2%	
6	Bromocresol Purple Carbohydrate Broth	
7	Buffered Peptone Water	
8	Butterfield's Buffered Phosphate Diluent	
9	Cooked Meat Medium	
10	Carbohydrate Utilization Broth	
11	Czapek Yeast (Autolysate) CYA agar	
12	Decarboxylase Test Medium (Lysine, Ornithine, Arginine provide separately)	
13	Dextrose Tryptone Agar	
14	EC Broth	
15	Egg Yolk Tellurite Supplement	
16	Frazer Broth	
17	L- EMB Agar	
18	Gelatin Phosphate Salt Broth	
19	Gram Negative Broth (GN)	
20	Hektoen Enteric Agar	
21	Hough & Liefson Medium	
22	Half Frazer Broth	
23	Klinger Iron Agar	
24	Koser's Citrate Broth	
25	Lactobacillus MRS Agar	
26	Lactose Broth	
27	Lactose Gelatin Medium	
28	Lauryl Tryptose Broth	

29	Liver Broth	
30	Lysine Iron Agar	
31	Macconkey agar	
32	Malonate Broth	
33	Malt Agar	
34	Motility Test Medium	
35	MRVP Broth	
36	MYP Agar	
37	Modified Oxford Agar	
38	MY-40 Agar	
39	Nitrate Broth	
40	Nutrient Broth	
41	Nutrient Agar	
42	Peptone Water Diluent	
43	Plate Count Agar	
44	Phenol Red Carbohydrate Broth	
45	Potato Dextrose Agar	
46	Pseudomonas Presumptive Test Broth	
47	Pseudomonas confirmation medium (Skim Milk Agar)	
48	Palcam Agar	
49	Phosphate Buffered peptone water	
50	Selenite Cystine Broth	
51	Sheep Blood Agar	
52	Sulphite Agar	
53	Tetrathionate Broth	
54	Thiosulfate-Citrate-Bile Salts-Sucrose Agar (TCBS)	
55	T1 N1 Agar	
56	Thioglycollate Agar	
57	Tryptone Glucose Extract Agar	
58	Triple Sugar Iron Agar	
59	Tryptone Broth	
60	Trypticase Soy Broth	
61	Tryptose-Sulfite Cycloserine (TSC) Agar	
62	Urea Broth	
63	Violet Red Bile Agar	
64	Xylose Lysine Deoxycholate Agar (XLD)	

**Note 1: The bidder has to provide the above mentioned consumables and media to FSSAI/State/UT based on their requirement**

**Note 2: If the needs arises the successful bidder may also be allowed to deliver other approved or equivalent makes and models/ latest specification of the equipments quoted by other qualified bidders in the tender after approval from FSSAI HQs**



## **PART V- EVALUATION CRITERIA & PRICE BID ISSUE**

1. **Evaluation Criteria**- The broad guidelines for evaluation of Bids will be as follows:

(a) 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.

(b) 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.

(c) 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.

(d) 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.

(e) The decisions of the Technical Evaluation Committee on whether the tenders are responsive or non-responsive or requiring clarifications will be informed.

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

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

(h) The Lowest Bid will be decided upon the lowest price quoted by the particular Bidder as per the Price Format given at Para 2 below for each region separately. The consideration of taxes and duties in evaluation process will be as follows :-

- L-1 bidder will be determined by excluding levies, taxes and duties levied by Central/State/Local governments such as excise duty, GST, Octroi/entry tax, etc. on Goods and Services as quoted by bidders.

(i) Initially all labs in a zone will be offered to L1 bidder only. In case, L1 bidder expresses inability to complete the entire order in time due to capacity constraint, the bidder will have to take up at least 60 per cent labs(location of labs will be decided by QA Division, FSSAI as per requirement/priority). If the L1 bidder fails to take up at least 60 per cent labs, the bidder will be debarred and black listed for quoting without sufficient resources. Retendering will be done for the zone/lab area. Further, the particular L1 bidder who is blacklisted for non-performance in a zone will also not get the

opportunity to set up labs in other zones, irrespective of the fact whether the bidder is L1 or higher in other zones.

(j) If L1 bidder executes order for at least 60 per cent labs in a zone, the balance labs will be offered to other technically qualified bidders at L1 rates in the ascending order of price quote, i.e. L2, L3, L4 etc. The labs which are not taken up by any of the bidders, will be retendered and L1 bidder will not be allowed to participate in the re-tendering process.

(k) If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price will prevail and the total price will be corrected. If there is discrepancy between words and figures; the amount in words will prevail for calculation of price.

(l) The Lowest acceptable Bid will be considered further for placement of Supply order after complete clarification and price negotiations as decided by the Tender Inviting Authority.

(m) The Bidders are required to spell out the rates of GST, etc in unambiguous terms; otherwise their offers will be loaded with the maximum rates of duties and taxes for the purpose of comparison of prices. In the absence of any such stipulation it will be presumed that the prices quoted are firm and final and no claim on account of such duties will be entrained after the opening of tenders.

(n) Any other criteria as applicable to suit in a particular case.

**Specification for Clean Room (Model layout area approx 84 sq. mtrs)**

Sl. No	Specifications	Qty.
1.	<p><b>GENERAL:</b> 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 &amp; Inspection is mandatory. <b><u>Laboratory must follow the minimum area availability to accommodate requisite equipments for performing required functions / in respective areas as per the Model layout .</u></b></p> <ol style="list-style-type: none"> <li>1. Sample receiving area, a documentation room and office area( unclassified).</li> <li>2. Media preparation room with sterilization and washing area(having sufficient space to store dry Media/reagents and Prepared Media in Refrigerators)</li> <li>3. Sample preparation room (ISO Class 7as per ISO 14644-1 and Class 10,000 as per FS209E equivalent) over pressure 45 pa.</li> <li>4. Inoculation &amp; Reference culture room ((ISO Class 7as per ISO 14644-1 and Class 10,000 as per FS209E equivalent) over pressure 30 pa.</li> <li>5. Clean corridor minimum 4.5-6 feet wide.<b>(As Per Space Availability at site)</b></li> <li>6. Incubation room and enumeration room (ISO Class 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).</li> <li>7. Small analysis room attached to Incubation room (ISO Class 8).</li> <li>8. De-contamination room (Unclassified) having access to collect material after Incubation room and also from Inoculation /Reference Rooms.</li> <li>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.</li> </ol>	--

	<p><b>10. Clean room must be provided with Emergency door/fire/smoke alarm and emergency bell.</b></p> <p>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.</p>	
2.	<p><b>MODULAR PANELLING and FLOORING WORKS</b></p> <p>The entire lab as per the layout shall be made with clean room modular partitions as per the following specification:</p> <ol style="list-style-type: none"> <li>1. <b>Wall panels:</b> 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 <math>40\pm 2 \text{ Kg/m}^3</math>. Overall thickness of the panel shall be 80 mm.</li> <li>2. <b>Cladding panels:</b> 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 <math>40\pm 2 \text{ Kg/m}^3</math>. Overall thickness of the panel shall be 40mm.</li> <li>3. <b>Ceiling panels:</b> 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 <math>40\pm 2 \text{ Kg/m}^3</math>. 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.</li> <li>4. <b>Riser Panels:</b> 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.</li> </ol> <p><b>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.</b></p> <ol style="list-style-type: none"> <li>5. <b>View Panel/Window :</b> The MOC is toughened &amp; tempered double glass of minimum 5mm thickness. Minimum standard size must be</li> </ol>	--

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°, 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<sup>3</sup>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, 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<sup>3</sup>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 leveled 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 smoothing. 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.** Fresh air and exhaust should be provided for wash/sterilization and decontamination area.

**19.** The bidder should do validation initially while commissioning and 1 more validations in an interval of 12 months.

3.	<p><b>Heating, Ventilation and Air conditioning system (HVAC)</b>  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%</p> <ul style="list-style-type: none"> <li>i. Clean corridor over pressure 40 ±5 pa</li> <li>ii. Sample preparation room over pressure 45±5 pa</li> <li>iii. Inoculation room &amp; Reference culture room over pressure 30±5 pa</li> <li>iv. Incubator room over 30±5pa (ISO Class 8))</li> <li>v. Entry and Exist at 15 to 30 pa respectively.</li> </ul> <p><b>The following area shall be provided with unclassified AC ventilation</b></p> <ul style="list-style-type: none"> <li>i. Media preparation room/sterilization room/office room</li> <li>ii. Sample receipt/storage</li> </ul> <p>Overall air quality shall be Class 10,000 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.)</p> <ul style="list-style-type: none"> <li>i. Validation of HEPA filters by appropriate tests like PAO etc.</li> <li>ii. Air Velocity and Air pattern at outlet of terminal filtration unit / filters.</li> <li>iii. Air Particulate count.</li> <li>iv. Air Change rate calculation.</li> <li>v. Temperature &amp; Humidity test.</li> <li>vi. Pressure differential levels of the Clean room / adjoining areas.</li> <li>vii. Positive pressure in Pascal as indicated for area</li> </ul> <p><b>a. Air Handling Unit(Thermo-Acoustic Lined):</b>  The air handling units shall be double skin(with high density puf 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' aluminium 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.</p> <p><b>Capacity –For lab area 900±100sqft( approx.. 84 sq.mtrs.)</b>  <b>AHU (2-3 No.s approx.. subject to Site Requirement) :-</b>  Capacity – 10000 – 12000 CFM  <b>(define after layout finalization)</b></p> <p><b>1. Material and Construction</b>  <b>Housing / Casing</b>  Thermo-acoustic panels shall be 46±2mm thick made of 0.6mm Pre-coated GSS on outside, 0.6mm Plain GI intermediate sheet &amp; 0.6mm Plain GI perforated Inner sheet. There should not be any metal to metal contact between inner and</p>	--
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outer skins of AHU casing to ensure thermal bridging. AHUs with mixing box or wherever fresh air is ducted shall be with thermal break profile.

Entire AHU to be mounted over Heavy Gauge 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 AHU 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. Coolingcoil**

- 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/cm<sup>2</sup>

**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 have 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-  $\pm 10\%$ ,  $\pm 3\%$  frequency, 5% total harmonic distortion during running and starting.
- vi. Type of starter- Suitable for DOL starting.
- vii. Voltage drop 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 stage 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 aerofoil 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.
2. 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
  3. 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
  4. Installation, Testing & Commissioning of powder coated perforated (65%) supply and Return air grills made out of extruded Aluminum sheets
  5. 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.
  6. Maximum sound limit in the corridor area shall be 50 to 60 db.
  7. Installation, Testing & Commissioning of Riser Filters.
  8. 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**)
  9. 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.
  10. 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.
  11. All the external ducting shall be made weather proof.

## 12. 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/cm<sup>2</sup> 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

	<p>d) MCB or Disconnect Switch</p> <p>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.</p> <p>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</p> <p>11. <b>Ballast:</b> 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 170-degree F. THD Value as per IEEE 519. The ballast shall carry Lifetime warranty against manufacturing defects</p>	
4.	<p><b>OUTDOOR CONDENSING UNITS (Packed ductable split AC)</b></p> <ul style="list-style-type: none"> <li>● Capacity – 25 – 30 TR @ approx..900±100 sqft( approx.. 84 sq.mtrs.) (capacity will be defined after area finalization)</li> <li>● Refrigerant –R410A/R134a/R407/ecofriendly</li> <li>● Compressor Type - Hermetically Sealed Scroll/screw</li> <li>● No of Compressors = 1</li> <li>● Controller - Microprocessor based</li> <li>● Power Supply – 440 /380 V, 3 Phase, 50 Hz, AC</li> <li>● Tube material – inner grooved copper</li> <li>● Fin Material – hydrophobic coated aluminum</li> <li>● Condenser fan – Direct driven Axial fan</li> <li>● Fan material – Aluminum</li> <li>● The coil shall have minimum 9.52mm dia(O.D. ) &amp; made from seamless solid drawn copper tubes. The minimum thickness of tube shall be 0.3 mm for cooling coils.</li> <li>● The depth of the coil shall be such as to suit the requirements. Viz. re-circulated air applications, or 100% fresh air applications. The coil Row shall be selected as per the coil selection. Computerized cooling coil selection output shall be submitted.</li> <li>● Each section of the coil shall be fitted with flow and return headers to feed all the passes of the coil properly. The headers shall be of copper</li> <li>● The fins shall be of aluminum. The minimum thickness of the fins shall be 0.13 mm. Fin spacing shall be 11-12 fins per inch (4-5fins per cm). Fins may be sine wave/corrugated type.</li> <li>● The tubes shall be mechanically expanded for maximum thermal contact between fins and tubes. The fins shall be evenly spaced and upright. The fins bent during installation shall be carefully realigned.</li> <li>● The Coil Casing shall be of SS. For 100 % fresh air application, Fins shall be hydrophilic coated type.</li> <li>● Each coil shall be factory tested at 600 PSI. Pressure &amp; Face velocity across coil shall not exceed 2.54 m/ s.</li> </ul> <p>AHU /CONDENSING UNITS should be</p> <ol style="list-style-type: none"> <li>a. well mounted over cemented blocks and raised 2 feet above the ground/floor.</li> <li>b. kept under shade of fiber or metal for rain /dust protection.</li> </ol>	--

	c. kept at a place easily accessible for maintenance and must not obstruct any passage or the activity of lab/neighborhood area.	
5.	<p><b>Drain Pipe</b></p> <p>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.</p>	
6.	<p><b>Electrical works comprehensive</b></p> <p>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.</p> <p>a) Adequate lightings shall be provided.</p> <p>b) The electrical inspectorate's approval shall be obtained by the bidder</p> <p><b>Wiring and Accessories</b></p> <p>2. Supply &amp; 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 &amp; earth, with modular 6A one way switch, modular plate, suitable GI box etc as required:</p> <p>3. Light point / exhaust fan / turbo ventilator points as required</p> <p>4. Supply &amp; wiring for circuit / sub main wiring in surface / recessed mounted rigid medium gauge 25mm PVC conduit with all accessories in surface/recess</p> <p>5. Supply and Fixing the following modular type switches &amp; accessories with modular plates and suitable GI boxes and giving necessary connections as required</p> <p>i. 6A SP 5 pin shuttered modular type socket with switch in each switch board</p> <p>ii. 2 nos 6 A SP 5 pin shuttered modular type socket with 2 No's modular switch –UPS power.</p> <p>iii. 16A 5 pin shuttered modular type socket with switch</p> <p>iv. Provision for shifting existing switch board to a conventional location and giving connections etc.</p> <p>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.</p> <p>vi. Installation of Clean Room Lights &amp; Fixture with fitting with LED12" x 12</p> <p>vii. Installation &amp; Testing of</p> <p>a. Modular Switches.</p> <p>b. Modular Sockets for various instruments in each room</p> <p><b>MCBs AND MCB DISTRIBUTION BOARDS</b></p> <p>i. Supply and installation of sheet steel, phosphatised and painted, dust</p>	--

	<p>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, colour washing etc. as required.</p> <p>ii. Supply and installation of sheet steel, phosphatised 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, colour washing etc. as required</p> <p><b>Single line electrical distribution diagram should be submitted by the vendor along with the technical offer.</b></p>	
7.	<p><b>Wall mounted fans (In unclassified areas)</b> 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.</p>	--
8.	<p><b>Lighting fixtures</b> 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)</p>	--
9.	<p><b>Validation of HVAC after completion</b> 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</p>	--
10.	<p><b>Fire extinguisher</b> Supply and installation of ABC type dry powder fire extinguisher of 2 kg. Capacity complete with initial charges and installation brackets</p>	--
11.	<p><b>Air curtain</b> 1.7m length should be installed wherever required i. Type: Non-Recirculating, Horizontal mount ii. Suction: Front without duct iii. Discharge: Vertically down</p>	--
12.	<p><b>Hand Sanitizer</b> (Manual Foot Operated dispenser for clean rooms) 1. The hand sanitizer should dispense disinfectant (Isopropyl alcohol) on to hands. 2. Body should be non-corrosive stainless-steel construction. 3. Tank capacity 500ml</p>	<b>Mini mum 4 nos.</b>
13.	<p><b>Static Pass box .(As per Space Availability at site)</b> Installation, Testing &amp; Commissioning SS-304 static Pass Box fully</p>	<b>1-2 nos.</b>

	automatic system, with electromagnetic interlocking system, digital display, UV & fluorescent light alarm system etc. (working size: 450mm W X 450mm D X 450mm H)	
14.	<b>Dynamic Pass box .(As per Space Availability at site)</b> 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)	3-4 nos.
15.	<b>Cross over Bench at entry and exist of clean room and media room ( as per approved layout )</b> 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.	<b>SS-304 Modular work bench with SS -304 top.(As per Space Availability at site)</b> 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)	2-3 No.s
17.	<b>SS-304 Modular Work bench With Granite top.(As per Space Availability at site)</b> Installation & Commissioning SS304 with 1 drawers 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.	3-4 No.s
18.	<b>SS-304 Modular work Bench with Granite Top and Sink .(As per Space Availability at site)</b> 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.	<b>Movable trolley with lockable wheels</b> SS 304, 18 & 16G combination, mat finish <b>Size :- 2.5' x 2.5' with two shelf 2nos</b>	2Nos
20.	<b>Revolving stool</b> Installation & Commissioning of SS-304 WORKING STOOL for above bench SS 304, 18 & 16G combination, mat finish.	10-12nos.
21.	<b>UV Garment SS-304 Storage (in Air Lock 2 of entry to clean room)</b> 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.	1 no.



	Approx internal dimension : 610(W)x 430(D)x 1335(H)mm with minor modifications as per available area	
22.	<b>SS Dustbin</b> :- Stainless steel foot operated dustbin of appropriate size as per requirement will be provided	<b>5-6 No.s</b>
23.	<b>Sample/Chemical SS-304 Storage Cabinet :</b> SS perforated 4 -5 Nos 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	<b>2-3 No.s</b>
24.	<b>Wall cabinets (over head racks):-</b> SS wall cabinets of suitable size will be provided for storage.	<b>3-4 No.s</b>
25.	<b>Air Conditioner 1.5 Tonne, 3 Star</b> for office room	(1 No.)
26.	<b>UPS 30KVA online:</b> 3 phase with inbuilt Isolator and one hour back up. There should be dedicated line for UPS	01 Nos
27.	<b>Stabilizer 50KVA</b>	01 Nos

**Specifications for Clean Room (Model layout area approx 120 sq. mtrs)**

Sl. No	Specifications	Qty.
1.	<p><b>GENERAL:</b> 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 &amp; Inspection is mandatory. <b><u>Laboratory must follow the minimum area availability to accommodate requisite equipments for performing required functions / in respective areas as per the Model layout .</u></b></p> <ol style="list-style-type: none"> <li>1. Sample receiving area, a documentation room and office area.</li> <li>2. Media preparation room with sterilization and washing area(having sufficient space to store dry Media/reagents and Prepared Media in Refrigerators)</li> <li>3. Sample preparation room (ISO Class 7as per ISO 14644-1 and Class 10,000 as per FS209E equivalent) over pressure 45 pa.</li> <li>4. Inoculation &amp; Reference culture room ((ISO Class 7as per ISO 14644-1 and Class 10,000 as per FS209E equivalent) over pressure 30 pa.</li> <li>5. Clean corridor minimum 4.5-6 feet wide. <b>(As Per Space Availability at site)</b></li> <li>6. Incubation room and enumeration room ( ISOCClass 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).</li> <li>7. Small analysis room attached to Incubation room (ISO Class 8)</li> <li>8. De-contamination room (Unclassified) having access to collect material after Incubation room and also from Inoculation /Reference Rooms.</li> <li>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.</li> <li>10. Section for molecular analysis is also provided with three</li> </ol>	

	<p>interconnected rooms as follows-</p> <ol style="list-style-type: none"> <li>a) DNA extraction room (ISO class 7) over pressure 45 pa*.</li> <li>b) PCR Room (ISO class 7) over pressure 30 pa*.</li> <li>c) POST PCR Room (ISO class 7) over pressure 45 pa*.</li> </ol> <p>( *PRESSURE IN PCR ROOMS CAN BE SET AS PER FUNCTIONS DECIDED BY LAB)</p> <p><b>11.</b> Clean room must be provided with Emergency door/fire/smoke alarms and emergency bell.</p> <p>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.</p>	
2.	<p><b>MODULAR PANNELLING and FLOORING WORKS</b></p> <p>The entire lab as per the layout shall be made with clean room modular partitions as per the following specification.</p> <ol style="list-style-type: none"> <li><b>1. Wall panels:</b> 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 <math>40\pm 2 \text{ Kg/m}^3</math>. Overall thickness of the panel shall be 80 mm.</li> <li><b>2. Cladding panels:</b> 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 <math>40\pm 2 \text{ Kg/m}^3</math>. Overall thickness of the panel shall be 40mm.</li> <li><b>3. Ceiling panels:</b> 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 <math>40\pm 2 \text{ Kg/m}^3</math>. 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.</li> <li><b>4. Riser Panels:</b> 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.</li> </ol>	--

**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°, 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<sup>3</sup>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<sup>3</sup>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 smoothing. 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 & its 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)

	<p>should be as indicated.</p> <p>19. Fresh air and exhaust should be provided for wash/sterilization and decontamination area.</p> <p>20. The bidder should do validation initially while commissioning and 1 more validations in an interval of 12 months.</p>	
<p>3.</p>	<p><b>Heating, Ventilation and Air conditioning system (HVAC)</b></p> <p>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%</p> <ul style="list-style-type: none"> <li>i. Clean corridor over pressure 40 ±5 pa</li> <li>ii. Sample preparation room over pressure 45±5 pa</li> <li>iii. Inoculation room &amp; Reference culture room over pressure 30±5 pa</li> <li>iv. Incubator room over 30±5pa (ISO Class 8)</li> <li>v. DNA extraction and POST PCR in molecular section over pressure 45±5 pa</li> <li>vi. PCR Room over pressure in molecular section 30±5 pa</li> <li>vii. Entry and Exist at 15 to 30 pa respectively.</li> </ul> <p><b>The following area shall be provided with unclassified AC ventilation</b></p> <ul style="list-style-type: none"> <li>i. Media preparation room/sterilization room/office room</li> <li>ii. Sample receipt/storage</li> </ul> <p>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.)</p> <ul style="list-style-type: none"> <li>i. Validation of HEPA filters by appropriate tests like PAO etc.</li> <li>ii. Air Velocity and Air pattern at outlet of terminal filtration unit / filters.</li> <li>iii. Air Particulate count.</li> <li>iv. Air Change rate calculation.</li> <li>v. Temperature &amp; Humidity test.</li> <li>vi. Pressure differential levels of the Clean room / adjoining areas.</li> <li>vii. Positive pressure in Pascal as indicated for area</li> </ul> <p><b>a. Air Handling Unit(Thermo-Accoustic Lined):</b></p> <p>The air handling units shall be double skin(with high density puf 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.</p> <p><b>Capacity –For lab area 1300±100sqft( approx.. 120sq.mtrs.)</b>  <b>AHU (3-4 No.s approx. subject to site requirement) :-</b>  Capacity – 16000 - 18000 CFM</p>	<p>--</p>

(define after .dwg finalization) .

## **Material and Construction**

### **Housing / Casing**

Thermo-acoustic panels shall be 46±2mm thick made of 0.6mm Pre-coated 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 is ducted shall be with thermal break profile.

Entire AHU to be mounted over Heavy Gauge 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 AHU 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/cm<sup>2</sup>

### **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 have 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-  $\pm 10\%$ ,  $\pm 3\%$  frequency, 5% total harmonic distortion during running and starting.
- vi. Type of starter- Suitable for DOL starting.
- vii. Voltage drop 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 stage 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 aerofoil 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.
2. 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
  3. 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
  4. Installation, Testing & Commissioning of powder coated perforated (65%) supply and Return air grills made out of extruded Aluminum sheets
  5. 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.
  6. Maximum sound limit in the corridor area shall be 50 to 60 db.
  7. Installation, Testing & Commissioning of Riser Filters.
  8. 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**)
  9. 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.

10. 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.

11. All the external ducting shall be made weather proof.

**12. 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

	<p>manufacturer/strategic business partner/ authorized dealers of manufacturer business partners only.</p> <p>8. <b>The system shall have a separate Control Panel consisting of:</b></p> <ol style="list-style-type: none"> <li>a) Electronic Ballast with high power factor of &gt; 0.90</li> <li>b) Run hour meter</li> <li>c) Mains on indicator lamp</li> <li>d) MCB or Disconnect Switch</li> </ol> <p>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.</p> <p>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</p> <p>11. <b>Ballast:</b> 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 170-degree F. THD Value as per IEEE 519. The ballast shall carry Lifetime warranty against manufacturing defects</p>	
<p>4.</p>	<p><b>OUTDOOR CONDENSING UNITS (Packed ductable split AC)</b></p> <ul style="list-style-type: none"> <li>● Capacity – 40-45 TR @ approx..1300±100 sqft( approx.. 120sq.mtrs.)</li> <li>● (capacity will define after area finalization)</li> <li>● Refrigerant –R410A/R134a/R407/ecofriendly</li> <li>● Compressor Type - Hermetically Sealed Scroll/screw</li> <li>● No of Compressors = 1</li> <li>● Controller - Microprocessor based</li> <li>● Power Supply – 440 /380 V, 3 Phase, 50 Hz, AC</li> <li>● Tube material – inner grooved copper</li> <li>● Fin Material – hydrophobic coated aluminum</li> <li>● Condenser fan – Direct driven Axial fan</li> <li>● Fan material – Aluminum</li> </ul> <p>It shall be complete with compressor, condenser, suitable motor, microprocessor based control panel, capacity control device, safety &amp; control instruments, cold insulation, interconnecting refrigerant/copper tubing ( to be paid separately) refrigerant &amp; oil, Liquid line strainers, de-hydrants, solenoid valves, shut off valves, safety &amp; isolation valves, Suitable distributors, vibration isolators to minimize vibration, flexible connection at suction &amp; 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.</p> <p>AHU /CONDENSING UNITS should be</p> <ol style="list-style-type: none"> <li>a. well mounted over cemented blocks and raised 2 feet above the ground/floor</li> <li>b. kept under fiber or metal shade for rain /dust protection.</li> </ol>	<p>--</p>

	c. kept at a place easily accessible for maintenance and must not obstruct any passage or the activity of lab/neighboring area.	
5.	<p><b>Drain Pipe</b>  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.</p>	
6.	<p><b>Electrical works comprehensive</b></p> <p>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.</p> <p>a) Adequate lightings shall be provided.  b) The electrical inspectorate's approval shall be obtained by the bidder</p> <p><b>Wiring and Accessories</b></p> <p>2. Supply &amp; 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 &amp; earth, with modular 6A one way switch, modular plate, suitable GI box etc as required:</p> <p>3. Light point / exhaust fan / turbo ventilator points as required</p> <p>4. Supply &amp; wiring for circuit / sub main wiring in surface / recessed mounted rigid medium gauge 25mm PVC conduit with all accessories in surface/recess</p> <p>5. Supply and Fixing the following modular type switches &amp; accessories with modular plates and suitable GI boxes and giving necessary connections as required</p> <p>i. 6A SP 5 pin shuttered modular type socket with switch in each switch board</p> <p>ii. 2 nos 6 A SP 5 pin shuttered modular type socket with 2 No's modular switch –UPS power.</p> <p>iii. 16A 5 pin shuttered modular type socket with switch</p> <p>iv. Provision for shifting existing switch board to a conventional location and giving connections etc.</p> <p>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.</p> <p>vi. Installation of Clean Room Lights &amp; Fixture with fitting with LED12" x 12</p> <p>vii. Installation &amp; Testing of</p> <p>c.Modular Switches.</p> <p>d. Modular Sockets for various instruments in each room</p> <p><b>MCBs AND MCB DISTRIBUTION BOARDS</b></p>	--

	<p>i. Supply and installation of sheet steel, phosphatised 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, colour washing etc. as required.</p> <p>ii. Supply and installation of sheet steel, phosphatised 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, colour washing etc. as required</p> <p><b>Single line electrical distribution diagram should be submitted by the vendor along with the technical offer.</b></p>	
7.	<p><b>Wall mounted fans (In unclassified areas)</b> 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.</p>	--
8.	<p><b>Lighting fixtures</b> 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)</p>	--
9.	<p><b>Validation of HVAC after completion</b> 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</p>	--
10.	<p><b>Fire extinguisher</b> Supply and installation of ABC type dry powder fire extinguisher of 2 kg. Capacity complete with initial charges and installation brackets</p>	--
11.	<p><b>Air curtain</b> 1.7m length should be installed wherever required</p> <p>i. Type: Non-Recirculating, Horizontal mount ii. Suction: Front without duct iii. Discharge: Vertically down</p>	--
12.	<p><b>Hand Sanitizer</b> (Manual Foot Operated dispenser for clean rooms) 1. The hand sanitizer should dispense disinfectant (Isopropyl alcohol) on to hands. 2. Body should be non-corrosive stainless-steel construction. 3. Tank capacity 500ml</p>	<b>Minimum 4 nos.</b>
13.	<p><b>Static Pass box .(As per Space Availability at site)</b></p>	<b>1-2</b>

	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)	<b>nos.</b>
<b>14.</b>	<b>Dynamic Pass box .(As per Space Availability at site)</b> 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)	<b>4-5 nos.</b>
<b>15.</b>	<b>Cross over Bench at entry and exist of clean room and media room ( as per approved layout )</b> 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)	<b>2-3 nos.</b>
<b>16.</b>	<b>SS-304 Modular work bench with SS -304 top.(As per Space Availability at site)</b> 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)	<b>3-4 No.s</b>
<b>17.</b>	<b>SS-304 Modular Work bench With Granite top.(As per Space Availability at site)</b> Installation & Commissioning SS304 with 1 drawers 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.	<b>4-5 No.s</b>
<b>18.</b>	<b>SS-304 Modular work Bench with Granite Top and Sink .(As per Space Availability at site)</b> 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	<b>1-2 No.s</b>
<b>19.</b>	<b>Movable trolley with lockable wheels</b> SS 304, 18 & 16G combination, mat finish <b>Size :- 2.5' x 2.5' with two shelf 2nos</b>	<b>2No.s</b>
<b>20.</b>	<b>Revolving stool</b> Installation & Commissioning of SS-304 WORKING STOOL for above bench SS 304, 18 & 16G combination, mat finish.	<b>13-15nos.</b>
<b>21.</b>	<b>UV Garment SS-304 Storage (in Air Lock 2 of entry to clean room)</b> 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	<b>1 no.</b>

	Leveling legs. Approx internal dimension : 610(W)x 430(D)x 1335(H)mm with minor modifications as per available area	
22.	<b>SS Dustbin</b> :- Stainless steel foot operated dustbin of appropriate size as per requirement will be provided	<b>7-8 No.s</b>
23.	<b>Sample/Chemical SS-304 Storage Cabinet :</b> 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	<b>3-4 No.s</b>
24.	<b>Wall cabinets (over head racks):-</b> SS wall cabinets of suitable size will be provided for storage .	<b>4-5 No.s</b>
25.	<b>Air Conditioner 1.5 Tonne , 3 Star</b> for office room	(1 No.)
26.	<b>UPS 30KVA online:</b> 3 phase with inbuilt Isolator and one hour back up. There should be dedicated line for UPS	01 Nos
27.	<b>Stabilizer 50KVA</b>	01 Nos



## LIST OF MICROBIOLOGY LABORTORY

S. No.	State	Name and Address of SFTL	Covered Area Available for Microbiology Laboratory (Sq Meters)
<b>Eastern Region</b>			
1.	Bihar	Combined Food and Drug Lab, Agamkuan, Patna-7	83.61
2.	Chhattisgarh	State Food Testing Laboratory, Kalibadi, Near Mahila Thana, Raipur Chhattisgarh	100.33
3.	Jharkhand	State Food Testing Laboratory, RCH campus, Namkum, Ranchi-834010	185
4.	Odisha	State Food Testing Laboratory, O/o the Deputy Director-Cum-Food Analyst, State Food Testing Laboratory, Convent Square, Near Ram Mandir, Kharvel Nagar, Bhubaneswar, Odisha- 751001	168.15
5.	West Bengal	West Bengal Public Health Laboratory, 2, Convent Lane, Kolkata -700015	102.19
<b>North Eastern Region</b>			
6.	Assam	State Public Health Laboratory, Bamuni Maidam, Guwahati 21, Assam, 781021	139.91
7.	Manipur	State Public Health Laboratory, R. D Wing Complex, Lamphet, Imphal, Manipur, 795004	316
8.	Meghalaya	Food Testing Laboratory, Pasteur Hill, Shillong -793001	190.8
9.	Nagaland	State Public Health Laboratory, Paramedical Colony, Kohima-797001, Nagaland	93.33
10.	Tripura	Regional Food Testing Laboratory , Agartala,799006	110.11
11.	Sikkim	State Food Laboratory, Chewatar, Singtam, Sikkim, 737128	270.01
<b>Northern Region</b>			
12.	Delhi	Food Laboratory, A-20 lawrence road industrial area, Delhi -110035	265.33
13.	Haryana, Chandigarh	State Food, Water and Excise Lab, Sector-11, D Chandigarh	167.22

14.	Himachal Pradesh	Composite Testing Laboratory Kandaghat Disst. Solan H.P. Pin- 173215	200
15.	Punjab	Food and Drug Testing Building, Kharar, Near Civil Hospital, District - SAS Nagar, Punjab, 140301	177
16.	Uttar Pradesh	Government Public Analyst Laboratory ,Sec-C, Aliganj, Lucknow, UP-226024	149
17.		Regional Public Analyst Laboratory, Medical College Compound, Meerut,250004	92.3
18.		Regional Public Health Laboratory, Shivpur, Varanasi	184
19.	Uttarakhand	State Food and Drug Testing Laboratory, Kiccha road, Rudrapur, Distt. US Nagar	111.5
<b>Western Region</b>			
20.	Gujarat	Regional Food Laboratory,University road, Near Forensic Science Laboratory, Rajkot 360 005	109.65
21.		Food and Drugs Laboratory, Near Polytechnic College , Nizam Pura, Vadodara-390002	240
22.		Regional Food Laboratory, Near Mahakali Temple, New Lotus Ring Road, Bhuj - Kachchh - 370001	127
23.	Madhya Pradesh	State Food Testing Laboratory, Idgah Hills, Bhopal	102.2
24.	Maharashtra	Foods and Drugs Administrations Laboratory. Plot-341, Foods and Druds Administraion, Opposite RBI , Bandra, Kurla Complex, Bandra E, 400051, Mumbai.	130
25.		FDA Laboratory, 3rd Floor, Nath Supermarket, Aurangapura, Aurangabad, 431001	201.59
26.	Rajasthan	Food Analysis and Public Health Laboratory , Near IAM hall, Near Blood Bank, MBS Hospital, Nayapura Kota, Rajasthan, 324001	120
27.		Food Safety and Standards Laboratory, Rajiv Gandhi Hospital Campus, Alwar –	108
28.		Public Health Laboratory, Jodhpur, C- 27 Railway Road, Near Olympic Tower	172
29.		Public Health Lab, Maharana Bhupal Govt. Hospital Campus Udaipur- 313001	89.19
30.		State Central Public Health Laboratory, Mini Swasthaya Bhawan Mandir Marg, Sethi Colony, Jaipur (302004)	110

<b>Southern Region</b>			
31.	Andhra Pradesh	Regional Public Health Laboratory, Vishakhapatnam	233.00 (Under Construction)
32.	Karnataka	State Food Laboratory, PHI Compound, Sheshadri Road, Bangalore-560001	133.00
33.		Divisional Food Laboratory, Umar Khyam Road, Tilak Nagar, Mysore - 570 001	135
34.		Divisional Food Laboratory, Vaccine Institute Campus, Tilakwadi, Belagavi	120
35.	Kerala	Government Analysts' Laboratory, Red Cross Road, Thiruvananthapuram-695035	120.08
36.		Regional Analytical Laboratory, Malapparamba, Kozhikode	131.42
37.		Regional Analytical Laboratory, Ernakulam	111.48
38.	Puducherry	Department of Food and Drug Testing, Indira Nagar, Gorimedu	110.4
39.	Tamil Nadu	Food Analysis Laboratory, No.219, Race Course Road, Coimbatore - 641018	130
40.		Food Analysis Laboratory, Guindy, King Institute Campus, Chennai, Tamilnadu - 600032	287

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(Umesh Kumar Jain)  
Joint Director(QA)