

**Commissionerate of Food and Drugs Administration, Punjab**  
**Near Civil Hospital, Kharar, Punjab**  
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**CORRIGENDUM**

Refer to Expression of interest invited in the Tribune dated 10.03.2019 from organizations of repute for Design, Manufacture, procurement, installation, testing and commissioning of classified Food Microbiology Laboratory at State Food Laboratory, Punjab at Kharar and subsequent reminders regarding extension in the tender.

This is for the information of respective bidders that tender for setting up of Microbiology lab at Food laboratory, Punjab at Kharar has been postponed till further orders.

**Sd**

**Commissioner**  
**Food and Drug Administration, Punjab**

## ANNEXURE-A

**Following points may please be considered as included/omitted in the tender for setting up of Microbiology lab at Food laboratory, Punjab, Kharar**

1. In the tender document, Sr. No. 23, has been revised as per the details given below:  
CROSS OVER BENCH :- High end Stainless Steel Cross Over Benches like movable table which is attractive to look and comes with durable services. These are used for carrying different hospital product from one place to another. As this is thin, therefore it can fit anywhere without creating any problem.  
Features:  
High tensile strength  
Robust structure  
Specifications:  
General Use: Commercial Furniture  
Material: Stainless Steel 316  
Appearance: Modern  
Size: L mm (As Per Site ) x 350mm D x 610 mm H
2. Laboratory must be maintained at specified working temperature and humidity. The HVAC should maintain the temperature at  $22 \pm 3$  °C and Relative humidity 40 -60.
3. At S. No. 20, in lab furniture, include some tables made up of SS only to be used in clean room, few tables with racks for keeping Media /reagents , laboratory stools with backs and trolley . All lab furniture must be rust proof and anti vibration.
4. At S. No. 11, Overall thickness of the panels shall be 0.8 mm instead of 0.6mm for better durability.
5. At Sr. No. 12, Overall thickness of the panels shall be 0.8 mm instead of 0.6mm for better durability. Also, Color & view of inner surface wall of LAB shall be finalized after approval of FDA, Punjab instead of Hospital Authority.
6. Point regarding UV Germicidal Irradiation at Sr. No. 17 has been omitted.
7. At Sr. no.1 Supply Duct Damper should have filter of 0.3 micron instead of 3 micron mentioned earlier. Humidity should be maintained from 40-60 RH.
8. At Sr. No. 2 Condensing units should be of Hitachi/Bluestar/Mitsubishi or its equivalent make.
9. In view of the above mentioned revisions, vendors may submit their revised tentative layouts before the last date of submitting the tender.
10. Automated Shoe cover dispenser is also to be supplied by the tenderer.

## ANNEXURE-B

### LIST OF EQUIPMENT TO BE SUPPLIED ALONG WITH THEIR MAKES

S. No.	Name of Item	Quantity	Make
1	Anaerobic Jar	1	WHITLEY / SHEL LAB / BAKER or equivalent
2	Vertical Top Loading Autoclave	2	TOMY/PANASONIC/HIRAYAMA/TUTTNAUER/ALP/YAMATO/JEIOT ECH or equivalent
3	Bio-Safety Cabinet (Class II Type A2)	1	LABCONCO/COLE PARMER/ESCO/BAKER/NUAIRE/FASTER AIR or equivalent
4	BOD Incubator	1	Thermo fisher or equivalent make
5	Automatic colony counter (bench-top, digital)	1	INTERSCIENCE/WHITLEY/ SYNBIOSIS / MRC/ BIOBASE/SCHUETT-BIOTEC or equivalent
6	pH Meter	1	HANNA /HACH /THERMO/BIOBASE or equivalent
7	Laboratory Refrigerator -2 °C – 8 °C	3	ESCO/DAIREI/PANASONIC/HAIER/BIOBASE/FRIMED/LIEBHERR/ JEIOTECH or equivalent
8	Hot Air Oven	1	THERMO/COLE PARMER/MRC/JEIOTECH/ BIOBASE/BINDER or equivalent
9	Fogger	1	IDEALIN NANOFOGGER/ VECTORFOG/COLDMIST/AEROJET or equivalent
10	Incubators: 1) Ambient to 70 °C and 2) 5 °C to 50 °C	3	JEIOTECH/DAIHAN/JSR/VISION SCIENTIFIC/BINDER or equivalent
11	Stomacher	1	BIOMERIEUX/MERCK MILLIPORE/ SEWARD/VWR/ INTERSCIENCE or equivalent
12	Laminar Air flow	2	Reputed make
13	Shaking Incubator (Orbital)	1	EPPENDORF/IKA/THERMO/MRC/ GLF/JEIOTECH/BIOBASE or equivalent
14	Automatic Safety Bunsen Burner	2	INTEGRA/FIREBOY/COLE PARMER/ MRC/ SCHUETT- BIOTEC or equivalent
15	Frost Free Vertical Deep freezer (-25 °C)	1	Bluestar/Vestfrost or equivalent
16	Digital Thermal Hygrometer	2	FLUKE/TESTO/VWR/COLE PARMER or equivalent
17	Shoe cover Dispenser	1	Reputed make

## DETAILED SPECIFICATIONS OF EQUIPMENT

### 1. SPECIFICATIONS FOR ANAEROBIC JAR

Sl. No	Specifications	Requirements
1.	Application	The Anaerobic Jar System provides oxygen free environment applied in microbiological laboratories for the isolation/culturing of anaerobic and microaerophilic microorganisms
2.	Capacity	<ul style="list-style-type: none"> <li>• 12 liters total volume (1 no)</li> <li>• 3-4 Liters (1 No)</li> </ul>
3.	Material of construction	<ul style="list-style-type: none"> <li>• Transparent, unbreakable polycarbonate jar.</li> </ul>
4.	Unit	<ul style="list-style-type: none"> <li>• Jar should provided with pressure -cum -vacuum gauge attached to the lid</li> <li>• Jar should be ideal for all strict anaerobic test conditions.</li> <li>• Lid should consist of O- ring gasket.</li> <li>• It should be provided with petri dish (100 mm diameter) carrier/SS rack.</li> <li>• Schrader valve and screws to connect to vacuum pump</li> </ul>
5.	Vacuum pump	<ul style="list-style-type: none"> <li>• Suitable oil free vacuum pump for the system</li> </ul>
6.	Accessories	<ul style="list-style-type: none"> <li>• Catalyst/gas pouch startup kit</li> <li>• Anaerobe indicator tablets</li> <li>• Lid, complete with clamp and screw</li> <li>• O rings</li> </ul>
7.	Operation and training component	<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>
8.	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 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.	Supplier/ Manufacturer	<ul style="list-style-type: none"> <li>• Must be ISO certified for quality</li> </ul>
10.	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>
11.	Recommendations or warnings	<ul style="list-style-type: none"> <li>• Any warning signs would be adequately displayed</li> </ul>
12.	Warranty	<ul style="list-style-type: none"> <li>• Warranted for 3 years after satisfactory working excluding consumable parts and accessories.</li> </ul>
13.	Service contract clauses including prices	List of all spares and accessories with part no and price required for maintenance and repairs in future after

		guarantee/warranty period should be attached;
14.	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>• Service and operation manuals (original and copy) to be provided;</li> <li>• Advanced maintenance tasks documentation;</li> </ul>
15.	Payment	Payment only after satisfactory performance demonstration

## 2. SPECIFICATIONS FOR AUTOCLAVE

Sl. No	Specifications	Requirements
1	Operation	Should have following functions & features: <ol style="list-style-type: none"> <li>1. Single top automatic vertical opening lid.</li> <li>2. One-touch automatic lid Open / Close mechanism with Lid opening/closing detection Mechanism.</li> <li>3. Built in steam Condenser to ensure no steam exhausts into the lab.</li> <li>4. Exhaust bottle detection mechanism</li> </ol>
2	Chamber capacity (Effective internal volume)	<ol style="list-style-type: none"> <li>1. ~70 - 75 Liters (1 no.)</li> <li>2. ~50 Liters (1 no.)</li> </ol>
3	Temperature control	<ol style="list-style-type: none"> <li>1. Sterilizing temperature is controlled by the microprocessor within <math>\pm 2^{\circ}\text{C}</math> of the set temperature in the range of <math>115^{\circ}\text{C}</math> to <math>135^{\circ}\text{C}</math> with last run memory</li> <li>2. . 2. Should be able to balance the temperature and pressure deviates during sterilization, fine exhausting automatically in order to adjust the chamber condition.</li> <li>3. 3. Provided with external temperature PT100-Ohm sensor.</li> </ol>
4	Process mode	4 sterilization modes
5	Operating temperature range	For sterilizing: $105\text{-}135^{\circ}\text{C}$ , for heating: $45\text{-}104^{\circ}\text{C}$ and for warming: $45\text{-}95^{\circ}\text{C}$
6	Heat source	2.5-3 kW electric heater
7	Chamber internal material	SUS304 double/triple walled, steam jacket and separate boiler.
8	Display 1. Digital	Display range should be 1 to 99hours 2. Should show working status parameters (Time and temperature)
9	Rapid air cooling function	Should be provided with Built-in Cooling Fan for faster poststerilization cooling and shorter completion time.
10	Operating pressure	0.26 Megapascal and analog display range should be 0 0.4MPa

11	Warming	Variable 1 to 99 hours
12	Safety Device	Water level sensor, current leakage breaker, lid interlock, over heat & pressure Prevention, open temperature sensor detection & safety value.
13	Printer	Should come with inbuilt printer and option to print after every 1 minutes during operation
14	Accessories, spares and consumables	and consumables 1. Stainless Steel Baskets & containers for holding flasks, tubes etc. – 2 / 3 nos. 2. Appropriate built-in process printer for batch documentation 3. Appropriate Voltage stabilizer should also be supplied 4. Dust Cover – for both the systems
15	Power Supply	Single-Phase 230V AC (50/60 Hz) and fitted with plug compatible with local sockets
16	Warranty	Comprehensive warranty should be provided for 3 years.

### 3. SPECIFICATIONS FOR BIO-SAFETY CABINET

Sl. No	Specifications	Requirements
1.	Cabinet: Dimensions	Dimensions 1. System must work on laminar air flow technology Vertical 2. Working area minimum 4 ft (w) x 2 ft (h) x 2ft Interior work area to be from a single piece of IS304 grade stainless-steel with large radius (joint free) corners to simplify cleaning. The cabinet work area must have s no welded joints, which collect contaminants or rust. 3. Cabinet should be balanced with base stand with castor wheel and lock. Stand approx 711 mm height from same company. Single Piece Wall. Single piece work tray. Raised arm rests. Drain Pan / Drain valve or cock for cleaning spills in case work tray is fixed.
	Cabinet construction/ Work Zone	Body M.S with sufficient protective coating. Front Window should be laminated toughened glass>5mm, anti UV
2	Control system	Microprocessor based
3	Display	LCD - all information, HEPA Filter life and UV Life indicator displayed

4	Air Flow pattern (through ULPA/HEPA)	70% of the air re-circulated and 30% of the air exhausted
5	Class	100
6	Protection	operator, sample and environment
7	Average Airflow Velocity	
	Inflow	0.53 m/s (105 fpm)
	Down flow	0.33 to 0.35 m/s (70 fpm)
8	UV lamp	1. 30 to 40 W x 1 2. UV timer, UV life indicator, Emission of 253.7 nanometers for most efficient decontaminatio
9	Fluorescent Lamp	12 to 21 W x 2
10	Illumination	≥1000 lux
11	Consumption	760 W
12	Power Supply	210-240V/50/60 Hz
13	Sound Emission	62.5 dBA to 65 dBA
14	Filter specification ply	ULPA Filter Typical Efficiency
	Supply ULPA /HEPA Filter Typical Efficiency	≥99.999% for particle size between 0.1 to 0.3 microns
	Exhaust HEPA Filter Typical Efficiency	≥99.99% at 0.3 microns
15	Interlock function and alarm	Interlock function for UV lamp and front window. Alarm for any out of range parameters
16	Certification	1. NSF 49/EN1249 or Equivalent standard Test Certificate for Mini-Pleat HEPA Filters 2. Calibration Certificate for Pressure Gauge 3. Calibration Certificate for Air Velocity Anemometer
17	Services Required	System should come along with the entire necessary accessory and should be ready to work. Installation & onsite validation, Calibration certificates Manuals: Operation, maintenance & part list with detailed specifications, Operational & maintenance Training. For validation vendor should having it own capability with their own company trained service engineer to perform Cleanliness level validation. No third part validation will be entertained. One validation at the time of installation should be done by company personnel.
18	Electrical outlets	Minimum 2 nos. electrical outlets should be provided inside the work space.
19	Optional	One out of the two Biosafety cabinet systems must be supplied with thimble / canopy attached to air vent
20	Warranty	Comprehensive warranty should be provided for 3 years

#### 4. SPECIFICATIONS FOR BOD INCUBATOR

S. No.	Specifications	Requirement
1	Application	For use in microbiological laboratories to measure biochemical oxygen demand (BOD) . The incubators are used to sustain and control the humidity and temperature essential to perform many types of experiments in, microbiology and biology cells.
2	Double walled modular structure with 3” thick PUF insulation	<ul style="list-style-type: none"> <li>i) Outer wall: Powder coated steel sheet with resin baked finish</li> <li>ii) Inner wall: Stainless steel* with ribs for adjusting removable perforated shelves at the height of 45 mm. The nuts, screws and hinges of the inner chamber shall be of Stainless Steel*. ( *SS Grade X07Cr18Ni9 of IS 6911 : 1992 or equivalent)</li> <li>iii) Perforated Stainless Steel*Partition tray (6 nos.)</li> </ul>
3	Doors	Double door type <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	Capacity	• 340 Liters
5	Temperature Range	<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	Control Accuracy	• ± 0.1 °C or better (at 60°C).
7	Distribution Accuracy/uniformity	• ± 1 °C or better (at 37°C).
8	Temperature display	<ul style="list-style-type: none"> <li>• Microprocessor based Digital display of temperature along with calibration certificate by 17025 accredited agency.</li> <li>• Temperature recorder for inner chamber with maintenance free 46 battery backup and auto charging of battery</li> </ul>
9	Air circulation	• With two completely in built motors along with fan to keep the temperature uniform throughout the chamber
10	Heat up time & Cool Down time	<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	Timer	• 0 to 24 hrs X 7 days cyclic ON / OFF timer for



		illuminating port
12	Safety Alarms	Provision for audio-visual alarm to indicate <ul style="list-style-type: none"> <li>• Door opening after 2 min.</li> <li>• Self -diagnosis function including overheat</li> <li>• Prevention and overcurrent Protection</li> </ul>
13	Computer Interface	RS 485 / RS232 interface for multiple & single communication port
14	Voltage stabilizer	Automatic Stabilizer, 4 KVA with TDR (3minutes) electronic type
15	Documents Certificates Performance and safety standards (specific 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 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> <li>• Complete with IQ, OQ, PQ, Documents, Operations and Maintenance manuals</li> </ul>
16	Supplier/ Manufacturer	<ul style="list-style-type: none"> <li>• Must be ISO certified for quality</li> </ul>
17	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>
18	Operating manuals, service manuals, other manuals	Should provide 2 sets(hardcopy and softcopy) 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>
19	Warranty	<ul style="list-style-type: none"> <li>• Warranted for 3 years after satisfactory installation and working excluding consumable parts and accessories.</li> </ul>
20	Comprehensive Maintenance	Comprehensive Maintenance of the equipment supplied, installed, commissioned for 60 months after 3year Warranty/Defects Liability Period. This will include yearly calibration start-up / commissioning routine servicing, regular maintenance, preventive maintenance of equipment and components and break

		down repairs as and when occurring, ensuring that system does not remain out of service for a period more than 24 hours in case of major breakdowns and 6-8 hour in the case of minor breakdowns due to any unforeseen break down. The institution will provide Water / Electricity power, etc. for maintenance work. The successful tenderer shall keep the essential spares at site during the Contract Period to avoid the delay in attending faults / maintenance
21	Operation maintenance& training	The supplier will have to carry out successful installation at our laboratory premises (where ever the system has to be installed) and provide on – site comprehensive training for scientific personnel operating the system and support services till customer satisfaction with the system.

#### 5. SPECIFICATIONS FOR AUTOMATIC COLONY COUNTER (BENCH-TOP, DIGITAL)

S. No.	Specifications	Requirement
1	Camera	CMOS color camera or higher version Digital Zoom Minimum 28X or higher
2	Resolution	Minimum 1 mega pixels or higher
3	Color detection	Optional
4	Counting time	1000 colonies per second or more
5	Minimum size colony	0.1 mm or less
6	Lighting	LED and Automatic
7	Counting	1. Automatic, with manual control 2. Counting on petri dishes 90mm or higher 3. Counting on pour, Surface plates Yes; Optional – Petrifilms, Chromogenics
8	Data export	1. PDF, JPEG, BMP, PNG and EXCEL 2. USB Connection should be there
9	Computer system	Laptop with Windows 10, 3 GB RAM, Graphics Card, i-5 or higher processor. Guarantee 3 years
10	Good Laboratory Practice	GLP Compliance & full traceability
11	Validation	vendor should get it done through qualified engineer of OEM at the time of installation and yearly thereafter.
12	Warranty	Comprehensive warranty should be provided for 3 years

## 6. SPECIFICATIONS FOR PH / ORP METER

S. No.	Specifications	Requirement
1	Benchtop GLP Model pH cum ORP meter with digital pH electrode having built-in temperature sensor with Clogging Prevention System (CPS) technology, glass body, and spherical tip.	
2	pH Range	-2.000 to 16.000 pH
3	pH Resolution	0.001 pH, 0.01 pH
4	pH Accuracy (@25°C/77°F)	±0.01 pH, ±0.002 pH
5	pH Calibration 5 points (Standard mode)	1.68, 4.01 (3.00+), 6.86, 7.01, 9.18, 10.01, 12.45, and two custom buffers; 3 points (Basic mode) 4.01; 6.86; 7.01; 9.18; 10.01
6	pH Temperature Compensation ATC	-5.0 to 100.0°C; 23.0 to 212.0°F
7	mV Range	±1000.0 mV; ±2000.0 mV
8	mV Resolution	0.1 mV
9	mV Accuracy	±0.2 mV (±999.9 mV); ±1 mV (±2000 mV)
10	Temperature Specifications	1. Temperature Range -20.0 to 120.0 °C 2. Temperature Resolution 0.1 °C 3. Temperature Accuracy ±0.5 °C 4. °C/°F Yes
11	pH Electrode Diagnostics	Glass and reference junction diagnostics, out of calibration range , probe condition, response time
12	Logging	up to 1000 records organized in: Manual log-on-demand (Max. 200 logs), Manual log-on-stability (Max. 200 logs), Interval logging (Max. 600 samples; 100 lots)
13	Connectivity	1 micro USB port for charging and PC connectivity, 1 USB port for storage
14	Environment	0 to 50°C (32 to 122°F), RH max 95% non-condensing
15	Battery Type/Life	Built-in rechargeable battery /8 hrs.
16	Accessories	1. Cradle and Electrode Holder, 2. Compatible pH and ORP electrode with inbuilt temperature sensor 3. Buffer solutions for pH 4, 7 and 10 4. Cleaning solutions, battery Charger 5. Dust Cover
17	Warranty	Comprehensive warranty should be valid for 3 years including probe

## 7. SPECIFICATIONS FOR LABORATORY REFRIGERATOR - 2°C–8°C

Sl. No	Specifications	Requirements
1	Design	<ol style="list-style-type: none"> <li>1. Vertical with wheels</li> <li>2. Frost free, CFC free, Automatic Defrost</li> <li>3. 4 – 5 Height adjustable shelves</li> <li>4. Internal LED Lighting</li> <li>5. Single Triple-Pane/Double Layered Glass Door with ergonomic handle Key Lock</li> <li>6. Automatic door closing</li> <li>7. Fan forced air circulation to ensure stable &amp; uniform preservation environment.</li> </ol>
2	Controller	<ol style="list-style-type: none"> <li>1. Microprocessor Temp. Control Controller with 0.1°C resolution</li> <li>2. Controller to Display data about the unit and used to control temperature</li> <li>3. Control panel should be at eye level with Digital Temperature display &amp; Alarms</li> </ol>
3	Construction	Electro-galvanized steel with white, oven baked epoxy-polyester, anti-microbial, powder-coated finish with 304 Stainless Steel inner chamber
4	Capacity	Minimum 350 Liters
5	Temperature	<ol style="list-style-type: none"> <li>1. Range: 2°C to 8°C</li> <li>2. Uniformity: ±3°C</li> </ol>
6	Alarm	Open door, High/Low temperature, Clogged condenser filter
7	Warranty	Comprehensive warranty should be provided for 3 year

## 8. SPECIFICATIONS FOR HOT AIR OVEN

Sl. No	Specifications	Requirements
1	External material	304 Grade Stainless Steel body with powder coating
2	Interior material	Fully stainless steel
3	Inner chamber	Stainless steel structure with adjustable minimum 2 shelves.
4	Window	Double layer glass observation window in front side
5	Type	Bench Top type (Table top model).
6	Dimension (W×D×H)	<ol style="list-style-type: none"> <li>1. Interior (mm) 400×360×420</li> <li>2. Exterior (mm) 577×642×760</li> </ol>
7	Temp. Range	Ambient +10°C to +250°C
8	Temperature Accuracy	±0.5°C

9	Temperature Protection	Automatic over temperature alarm based protection system.
10	Timer function	Choice of time (On/Off condition) for automatic setting.
11	Temp. Control	Microprocessor control with LCD/ LED display.
12	Convection system	Gentle drying and heating with superior temperature uniformity.
13	Certification, Document and Installation	Traceable calibration certificate from NABL accredited calibration lab. Installation has to be carried by the skilled team with IQ, OQ and PQ documents and on site validation to be carried out to ensure proper working of the oven as per specification.
14	Capacity	60-70 Ltrs.
15	Warranty	Comprehensive warranty should be provided for 3 year.

## 9. SPECIFICATIONS FOR FOGGER

Sl. No	Specifications	Requirements
1	Droplet Size	Consistent sub micron (<1 micron, non-wetting) – 20 micron particle size generation - adjustable
2	Material of Construct	1. Tank, Flow control and Nozzle assembly (non-clogging vortex type) should be of SS316 grade, easy to clean, detachable and non corrosive for chemical 2. Handle and hardware: SS304
3	Flow rate	1 - 2 liters/hr.
4	Air filter	Triple stage air filter for motor protection
5	Tank Capacity	5-10 liters.
6	Area Coverage	>10000 Cubic Fts.
7	Noise Level	<85 db
8	Motor	CE approved, 22000 RPM
9	Electrical	200-270V, 50 HZ
10	Timer	Digital timer - 1 – 99 min. with inbuilt hour counter.
11.	Consumables	Should be compatible with wide range of disinfectant in a closed room. Should be supplied with Spore-Killing Ready-To-Use non-toxic antimicrobial disinfectant solution - 5 liters.
12.	Optional	Rotation stand for uniform dispensing of the droplets
13.	Warranty	Comprehensive warranty should be provided for 3 years

**10. Specification for Incubators 1) Ambient to 70 °C and 2) 5 °C to 50°C**

Sl. No	Specifications	Requirements
1	Application	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	Material of Construction	<p>Double walled construction with complete inner chamber made of Corrosion resistant stainless steel (AISI 430)</p> <ul style="list-style-type: none"> <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 per chamber</li> </ul>
3	Capacity	150- 200 liters
4	Temperature Range	<p>Temperature should be thermostatically controlled</p> <ul style="list-style-type: none"> <li>• Temperature should be thermostatically controlled with range 1) <math>\pm 2^{\circ}</math> C Ambient to 70° C and 2) 5 °C to 50°C</li> <li>• Over-Temperature Cut-Off with audio/ visual alarm</li> <li>• Low Temperature Warning alarm</li> </ul>
5	Unit	<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	Calibration	Certificate from a ISO 17025 accredited lab for 3 different temperature points
7	Operation and Training component	<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	Certificate Performance and Safety Standards (specific to 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 1713485 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	Supplier/Manufacturer	<ul style="list-style-type: none"> <li>• Must be ISO certified for quality</li> </ul>
10	Service Support Contact Details	<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.	Recommendations for warnings	<ul style="list-style-type: none"> <li>• Any warning signs would be adequately displayed</li> </ul>
12.	Warranty	<ul style="list-style-type: none"> <li>• Warranted for 2 years after satisfactory installation and working excluding consumable parts and accessories.</li> </ul>
13.	Service contract clause 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>
14	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>• 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. SPECIFICATIONS FOR STOMACHER

Sl. No	Specifications	Requirements
1	Time Set	30,180,600s or work continuously
2	Rap speed	3-12/second
3	Valid capacity	80-40 ml
4	Material of case	Stainless steel body with powder coating
5	Power consumption	165W
6	Electronic motor rate	500-1500 rpm
7	Display	LCD
8	Power supply	220v/50 HZ

12 SPECIFICATIONS FOR LAMINAR AIR FLOW

Sl. No	Specifications	Requirements
1	Working Principle	<ul style="list-style-type: none"> <li>The LAMINAR AIRFLOW UV Chamber when switched on, the blower unit should create a suction pressure through the primary filter (or Pre-filter), which removes dust particles of above 10 micron size in the first stage. Subsequently, the filtered air passed to the HEPA filters, where the particles or substances of 0.3 micron size and above are removed. Finally the ultraclean filtered air supplied to the working chamber as a uniform airflow to perform precision analysis activities</li> </ul>
2	Cabinet	<ul style="list-style-type: none"> <li>The system should have</li> <li>Laminar Air Flow Cabinet should have fully enclosed bench designed.</li> <li>The Laminar flow bench should have Stainless Steel SS 304 table with MS coated tabular frame and body.</li> <li>Laminated Unit should also have stand by control system with lock and key.</li> </ul>
3	Unit	<ul style="list-style-type: none"> <li>The unit should have</li> <li>Should have LCD display to show measured parameters like stage velocity, total using time, UV/FL lamp on/off etc</li> <li>Unit should have Differential pressure indicator.</li> </ul>
4	Cleanliness level	<ul style="list-style-type: none"> <li>The system should have</li> <li>CLASS 100 (ISO 5 for particle sizes <math>0.5 \mu &lt; 3530</math> particles/M<sup>3</sup> of air at both at Rest &amp; Operation Condition as per ISO 14644 –1</li> </ul>
5	Working area	Minimum 4 ft (w)x 2 ft (h) x 2ft
6	Work Table	<ul style="list-style-type: none"> <li>It should have IS 304 Grade Stainless Steel with finish 4 polish surface Front door</li> <li>5 mm thick clear Acrylic Sheet - Vertical sliding</li> </ul>
7	Floor standing base stand for cabinet	<ul style="list-style-type: none"> <li>Have leveling feet or locking casters or motorized height adjustment.</li> </ul>
8	Direction of flow	Vertical airflow
9	Air flow speed	<ul style="list-style-type: none"> <li>Filter face Velocity should have 90 Feet/Minute <math>\pm</math> 20 (0.45 m/s)</li> </ul>
10	Blower assembly	<ul style="list-style-type: none"> <li>It should have one set blower system, which consists of dynamically &amp; statically balanced aluminium centrifugal impeller driven by 1/4 HP, single phase, 1200- 1400RPM motor, enclosed in an PU coated GI casing suitably suspended in a pair springs &amp; connected to the filter chamber through flexible canvas duct.</li> </ul>
11	HEPA Filters	<ul style="list-style-type: none"> <li>The filters should have</li> <li>Size: 30" x 18" x 3"</li> <li>Type: Separator less type, Mini-Pleats HEPA Media</li> <li>Media: Ultra clean glass fiber paper</li> <li>Retention: 0.3 Micron</li> <li>Efficiency: 99.997% or better</li> <li>Initial Pressure: 16 mm WG</li> <li>Grade : H13 rating</li> </ul>
12	Pre filters	<ul style="list-style-type: none"> <li>Size : 600 x 300 x 65 mm</li> </ul>



		<ul style="list-style-type: none"> <li>• Media : Synthetic, non-woven polyester</li> <li>• Casing : Epoxy painted GI frame</li> <li>• Retention : 10 Micron &amp; above</li> <li>• Efficiency : 90%</li> <li>• Initial Pressure: 6 mm WG</li> <li>• Grade : F7 rating</li> </ul>
13	Particles retention	• 0.3 Micron
14	Noise level	< 60 dBA±5
15	Power supply	• Power supply should have 220-230 V, 50 Hz. And all components UL listed and CE marked
16	Illumination	• Externally mounted illuminating lamp with separate switch to illuminate the work area
17	Light	<ul style="list-style-type: none"> <li>• High intensity, low wattage &gt;800 lux</li> <li>• It should be 15 Watts, 1½ Feet length, – 1 No. each</li> </ul>
18	UV Lamp	• Pre-mounted UV lamp (30 W) with separate switch with UV light hours run indicator.
19	Other Accessories	<ul style="list-style-type: none"> <li>• Two gas outlet in the working area, one on each side wall</li> <li>• Leveling Screws &amp; Castor Wheels</li> <li>• DOP test port</li> <li>• Easily changeable pre-filters</li> <li>• Fitted with UV Germicidal lamp for sterilization.</li> <li>• Pre-installed pressure gauge for Measurement of HEPA Filters Choking system.</li> <li>• Ensure noiseless operation and anti-vibration construction provides efficient working environment.</li> <li>• Audible or highly visual alarm for filter replacement warning</li> </ul>
20	Electrical socket or pass through ports	<ul style="list-style-type: none"> <li>• Side mounted switches for minimum three (15/5 amp) electrical sockets for ancillary equipment operation or</li> <li>• Convenient rear-wall pass through ports for safe routing of instrument cords, cables and leads for 15/5 amps multiple socket with switches on the wall,</li> </ul>
21	Standard compliance	• Performance specifications and construction must meet or exceed OSHA, ANSI and relevant international standards to assure operator safety
22	Certification required for sign off	<ul style="list-style-type: none"> <li>• Test Certificate for Mini-Pleat HEPA Filters</li> <li>• Calibration Certificate for Pressure Gauge</li> <li>• Calibration Certificate for Air Velocity Anemometer,</li> <li>• Warranty Certificate for 24 months after satisfactory installation and working</li> </ul>
23	Spares	<ul style="list-style-type: none"> <li>• Spare compatible UV lamp – 2 Nos</li> <li>• A spare HEPA filter for chamber – 1 No</li> <li>• Gas burner (Bunsen burner) – 2 Nos</li> </ul>
24	Operation and Maintenance training component	The supplier will have to carry out successful installation at our laboratory premises (where ever the system has to be installed) and provide on – site comprehensive training for scientific personnel operating the system and support services till customer satisfaction with the system.

25	Warranty	Warranted for 2 years after satisfactory installation and working excluding consumable parts and accessories.
26	Comprehensive Maintenance	Comprehensive Maintenance of the equipment supplied, installed, commissioned for 60 months after 2 year Warranty/Defects Liability Period. This will include yearly calibration start-up / commissioning routine servicing, regular maintenance, preventive maintenance of equipment and components and break down repairs as and when occurring, ensuring that system does not remain out of service for a period more than 24 hours in case of major breakdowns and 6-8 hour in the case of minor breakdowns due to any unforeseen break down. The institution will provide Water / Electricity power, etc. for maintenance work. The successful tenderer shall keep the essential spares at site during the Contract Period to avoid the delay in attending faults / maintenance
27	Service contract clause including prices	List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached;
28	Operating manual, service manuals and 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>• Advanced maintenance tasks documentation;</li> <li>• Certificate of calibration and inspection</li> </ul>
29	Certificates, Performance and safety standards	<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>
30	Supplier/manufacturer	<ul style="list-style-type: none"> <li>• Must be ISO certified for quality</li> </ul>
31	Service support contact details	<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>
32	Recommendations or warnings	<ul style="list-style-type: none"> <li>• Any warning signs would be adequately displayed</li> </ul>

### 13. SHAKING INCUBATOR (ORBITAL)

Sl. No	Specifications	Requirements
1	Shaker requirements	<p>1. Single knob selects all operating conditions and quickly Tripleeccentric counter balanced drive</p> <p>2. Acceleration circuit to prevent sudden start and stop should be available.</p> <p>3. Programmable controller offering up to 4 modes of timer and parameter control for reduced user intervention.</p> <p>4. Timer 0.1 to 99.9 hours or continuous mode 5. UV germicidal lights. 6. Noiseless operation</p>
2	Shaking Speed range	25 to 400 rpm with $\pm 2$ rpm accuracy
3	Temperature range	20°C below ambient to 80°C with accuracy of $\pm 0.1^\circ\text{C}$ and stability of $\pm 0.2^\circ\text{C}$ at 37°C
4	Shaking orbit	approx. 25 mm
5	Display	Large, easy to read LCD display screen
6	Audible and Visible Alarm	Should indicate when speed deviates more than 5 rpm or temperature deviates more than 1°C from set point, and when timer operation has expired.
7	Overall dimensions (W x D x H)	Minimum 62 x 75.4 x 82 CM
8	Accessories	<p>1. Universal Platform of at least 45 x 45 cm having capacity to holds assortment of various size of flask sizes upto 2 Ltrs and test tube racks.</p> <p>2. System should be supplied with 125ml clamps (10 Nos.), 250 ml clamps (5 Nos.), 500 ml clamps (05 Nos.), 1000 ml (02 Nos.) and 2000 ml (01-02Nos)</p> <p>3. Test tube rack for 20x50ml tube-1 no and test tube rack for 42x15ml tubes-1</p> <p>4. It should be supplied with compatible stabilizer/servo for smooth operation 5. Dust cover</p>
9	Warranty	Comprehensive warranty should be provided for 3 years

14. **SPECIFICATIONS FOR AUTOMATIC SAFETY BUNSEN BURNER**

<b>Sl. No</b>	<b>Specifications</b>	<b>Requirements</b>
1	Basic features	<ol style="list-style-type: none"><li>1. Safety Bunsen Burner with flame monitoring, overheating protection and display movement sensor for safe operation.</li><li>2. Two adjustment knobs for air and gas to allow easy fine-tuning of flame size and temperature.</li><li>3. For heating applications or to flame-sterilize necks of large Erlenmeyer flasks, the Safety Bunsen Burner should be equipped with a long burner head.</li></ol>
2	Operation modes	Manual by matches, Infrared sensor with the push button without the need of a lighter, Foot switch.
3	Material	UV- and solvent-resistant, Smooth, chrome-plated metal housing.
4	Accessories	<ol style="list-style-type: none"><li>1. All accessories for running with natural gas should be supplied</li><li>2. Main adapter</li><li>3. Adapter for standard gas hose with inner diameter 10 mm.</li></ol>
5	Warranty	Comprehensive warranty should be provided for 3 years

### 15. Upright Frost Free Vertical Deep Freezer (-25 °C)

Sl. No	Specifications	Requirements
1	Application	For storage of various biological products including, ATCC cultures, enzymes, chemicals or material testing components for a longer period of time
2	Unit	<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 • 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>• Built in Voltage stabilizer/battery back-up for 48h or more</li> <li>• Castors for easy movability</li> </ul>
3	Capacity	Capacity: 250 L or higher with a combination of sealed 5-7 pullout drawers / shelves of different sizes that can be adjusted for storage flexibility
4	Temperature	<ul style="list-style-type: none"> <li>• Range - 10 ~ - 25 °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	Alarms	Acoustic/visual Safety alarms for • High/low temperature, • door ajar and • malfunction system alarms
6	Optional Accessories:	Racks for 50 mm boxes (incl. dividers), Racks for 75 mm boxes (incl. dividers)
7	Voltage stabilizer	Suitable and compatible voltage stabilizer
8	Calibration	Certificate from an ISO 17025 accredited lab for 3 different temperature points.
9	Operation and training component	<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>
10	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 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	Supplier/ Manufacturer	<ul style="list-style-type: none"> <li>• Must be ISO certified for quality</li> </ul>

12	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/adhoc) to be declared by the manufacturer;</li> </ul>
13	Recommendations or warnings	<ul style="list-style-type: none"> <li>• Any warning signs would be adequately displayed</li> </ul>
14	Warranty	<ul style="list-style-type: none"> <li>• Warranted for 3 years after satisfactory installation and working excluding consumable parts and accessories</li> </ul>
15	Comprehensive Maintenance	Comprehensive Maintenance of the equipment supplied, installed, commissioned for 60 months after 2 year Warranty/Defects Liability Period. This will include yearly calibration start -up / commissioning routine servicing, regular maintenance, preventive maintenance of equipment and components and break down repairs as and when occurring, ensuring that system does not remain out of service for a period more than 24 hours in case of major breakdowns and 6 -8 hour in the case of minor breakdowns due to any unforeseen break down. The institution will provide Water / Electricity power, etc. for maintenance work. The successful tenderer shall keep the essential spares at site during the Contract Period to avoid the delay in attending faults / maintenance
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: - • 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

## 16. DIGITAL THERMOHYGROMETER

<b>Sl. No</b>	<b>Specifications</b>	<b>Requirements</b>
1	Temperature	-20 °C to 60 °C ± 0.5 °C - Readability 0.1 °C
2	Temperature accuracy	±0.5°C - ±1.0°C
3	Resolution	0.1°C / 0.1°F
4	Temperature Update Rate	500 ms
5	Data storage capacity	99 points
6	R.H. Range	5 % to 95 % R.H. ± 2.5 % - % R.H readability
7	Display	Backlit dual display of humidity and temperature