



SPECIFICATION FOR MICROBIOLOGY LAB EQUIPMENTS



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Laminar Air Flow

S. No.	Specifications	Requirement	Yes/No
1.	Working principle	<ul style="list-style-type: none"> 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 ultra-clean filtered air supplied to the working chamber as a uniform airflow to perform precision analysis activities 	
2.	Cabinet (Material of construction)	<p>The system should have</p> <ul style="list-style-type: none"> Laminar Air Flow Cabinet should have fully enclosed bench designed. The Laminar flow bench should have Stainless Steel SS 304 table with MS coated tabular frame and body. Laminated Unit should also have stand by control system with lock and key. 	
3.	Unit	<p>The unit should have</p> <ul style="list-style-type: none"> Should have LCD display to show measured parameters like stage velocity, total using time, UV/FL lamp on/off etc Unit should have Differential pressure indicator. 	
	Cleanliness level	<p>The system should have</p> <ul style="list-style-type: none"> CLASS 100 (ISO 5 for particle sizes $0.5 \mu < 3530$ particles/M³ of air at both at Rest & Operation Condition as per ISO 14644 –1 	
4.	Working area	Minimum 4 ft (w)x 2 ft (h) x 2ft	
5.	Work table	<ul style="list-style-type: none"> It should have IS 304 Grade Stainless Steel with finish 4 polish surface Front door 5 mm thick clear Acrylic Sheet - Vertical sliding 	
6.	Floor standing Base stand for cabinet	<ul style="list-style-type: none"> Have leveling feet or locking casters or motorized height adjustment. 	
7.	Direction of flow	<ul style="list-style-type: none"> Vertical airflow 	
8.	Airflow Speed	<ul style="list-style-type: none"> Filter face Velocity should have 90 Feet/Minute \pm 20 (0.45 m/s) 	
9.	Blower Assembly	<ul style="list-style-type: none"> It should have one set blower system, which consists of dynamically & 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 & connected to the filter chamber through flexible canvas 	

		duct	
10.	HEPA Filters	<p>The filters should have</p> <ul style="list-style-type: none"> • Size: 30" x 18" x 3" • Type: Separator less type, Mini-Pleats HEPA Media • Media: Ultra clean glass fiber paper • Retention: 0.3 Micron • Efficiency: 99.997% or better • Initial Pressure: 16 mm WG • Grade : H13 rating 	
11.	Pre Filters	<ul style="list-style-type: none"> • Size : 600 x 300 x 65 mm • Media : Synthetic, non-woven polyester • Casing : Epoxy painted GI frame • Retention : 10 Micron & above • Efficiency : 90% • Initial Pressure: 6 mm WG • Grade : F7 rating 	
12.	Particle Retention	<ul style="list-style-type: none"> • 0.3 Micron 	
13.	Noise level	< 60 dBA±5	
14.	Power Supply	<ul style="list-style-type: none"> • Power supply should have 220-230 V, 50 Hz. And all components UL listed and CE marked 	
15.	Illumination	<ul style="list-style-type: none"> • Externally mounted illuminating lamp with separate switch to illuminate the work area. 	
16.	Light	<ul style="list-style-type: none"> • High intensity, low wattage >800 lux • It should be 15 Watts, ,1½ Feet length,- 1 No. each 	
17.	UV lamp	<ul style="list-style-type: none"> • Pre-mounted UV lamp (30 W) with separate switch with UV light hours run indicator. 	
18.	Other accessories	<ul style="list-style-type: none"> • Two gas outlet in the working area, one on each side wall • Leveling Screws & Castor Wheels • DOP test port • Easily changeable pre-filters • Fitted with UV Germicidal lamp for sterilization. • Pre-installed pressure gauge for Measurement of HEPA Filters Choking system. • Ensure noiseless operation and anti-vibration construction provides efficient working environment. • Audible or highly visual alarm for filter replacement warning 	
19.	Electrical sockets or Pass Through Ports	<ul style="list-style-type: none"> • Side mounted switches for minimum three (15/5 amp) electrical sockets for ancillary equipment operation or • 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, 	

20.	Standards Compliance	<ul style="list-style-type: none"> Performance specifications and construction must meet or exceed OSHA, ANSI and relevant international standards to assure operator safety 	
21.	Certification required for sign off	<ul style="list-style-type: none"> Test Certificate for Mini-Pleat HEPA Filters Calibration Certificate for Pressure Gauge Calibration Certificate for Air Velocity Anemometer, Warranty Certificate for 24 months after satisfactory installation and working 	
22.	Spares	<ul style="list-style-type: none"> Spare compatible UV lamp– 2 Nos A spare HEPA filter for chamber – 1 No Gas burner (Bunsen burner) – 2 Nos 	
23.	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.	
24.	Warranty	Warranted for 2 years after satisfactory installation and working excluding consumable parts and accessories.	
25.	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	
26.	Service contract clauses, including prices	List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached;	
27.	Operating manuals, service manuals, other manuals	Should provide 2 sets(hardcopy and soft-copy) of:- <ul style="list-style-type: none"> 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 	

28.	Certificates Performance and safety standards (specific to the device type);Local and/or international	<ul style="list-style-type: none"> • Should be FDA/CE/BIS approved product. • Manufacturer and Supplier should have ISO 13485 certification under ISO 9001 for 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 	
29.	Supplier/ Manufacturer	<ul style="list-style-type: none"> • Must be ISO certified for quality 	
30.	Service Support Contact details (Hierarchy Wise; including a toll free/landline number)	<ul style="list-style-type: none"> • Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer; 	
31.	Recommendations or warnings	<ul style="list-style-type: none"> • Any warning signs would be adequately displayed 	
32.	Payment	Payment only after installation, validation and performance demonstration	

Bio Safety Cabinet Class II Type B2 (Total Exhaust)

	Specifications	Requirement	Yes/No
1	Cabinet (Material of construction)	<ul style="list-style-type: none"> • Cabinet should have made from Galvanized Iron 18 SWG sheet metal with polyurethane paint coated finish and bottom will be supported with MS with PU coated modular stand which can be adjustable for height with leveling legs/or motorised. • External surfaces to be coated with antimicrobial coating to protect against surface contamination and inhibit bacterial growth. • Interior work area to be from a single piece of stainless-steel with large radius corners to simplify cleaning. • The cabinet work area must have s no welded joints, which collect contaminants or rust. 	
2	Unit	<p>The unit must be a bench top / console model.</p> <ul style="list-style-type: none"> • Front door Made of clear 5 mm thick Toughened glass, vertical sliding, with Feather touch Motorized operation, while opening the door UV Lamp will be cut “OFF” And while closing the door UV Lamp will be “ON” Automatically. • Side Panels: Both the sidewalls are made from double layered outer GI & inner stainless steel with return-air plenum in between. • Edges should perforated to avoid entry of room air into the work zone and exit of contaminated air in to the room and such contaminated air is sucked through this full height perforation at the edges of the sidewalls. • A recessed central area with drain pan to contain spills and prevent liquids from entering the lower filtration unit • The BSC shall be ergonomically designed for maximum user comfort and adjustability. • Fail-safe system to ensures that in case of exhaust failure, the cabinet’s main fan automatically shuts down to ensure safety to the user 	
3	Cleanliness level	<p>The system should have</p> <ul style="list-style-type: none"> • CLASS 100 (ISO 5 for particle sizes 0.5 μ 	

		<p>< 3530 particles/M³ of air at both at Rest &</p> <ul style="list-style-type: none"> • Operation Condition as per ISO 14644(ISO 5 replaces Class 100 • US-FS 209 E) Conforming to NSF/ANSI 49, USA & En12469 standards. 	
4	Working area	<ul style="list-style-type: none"> • Minimum 4 x 2 x 2 Ft (w x d x h) • 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. 	
5	Work table	It should have Removable type tabletop, made of perforated IS 304 Stainless Steel with satin finished.	
6	Direction of flow	Vertical	
7	Air Balancing	100% Exhaust & 0 % Re-Circulation	
8	Particle retention:	0.3 micron particles with typical efficiency of >99.997% 0.3 micron particles with typical efficiency of >99.997%	
9	Airflow Speed	Minimum airflow velocity of 90 ft/minute ± 20 through the work access opening. Velocity should have 90 Feet/Minute ± 20 Easy to-read LCD/other display for continuous monitoring of cabinet airflow	
10	Supply Air Blower	It should consists of dynamically & statically balanced aluminum centrifugal impeller driven by an Single phase, 1440-RPM motor, enclosed in a PU coated Suspended in a pair of springs & connected to the filter chamber through flexible canvas duct inside the cabinet.	
11	Exhaust Blower	<ul style="list-style-type: none"> • It should have suitable displacing capacity having a static of 60 mm WG and made of mild steel and directly driven by a single phase, 1440-RPM motor. The exhaust motor & blower unit to be connected to the cabinet through an exhaust duct made of rigid PVC pipe. 	
12	Exhaust Duct	<ul style="list-style-type: none"> • Direct-ducting (a leak-tight duct, a leak proof damper in the duct above the cabinet) to an exhaust system vented to the outside of the building without recirculation. Exhaust duct made of 125 mm diameter rigid PVC pipe. Suitable protection from rain with canopy at the end of the duct. 	
13	HEPA Filters	The filters should have	

		<ul style="list-style-type: none"> • Type: Separator less type, Mini-Pleats HEPA Media • Media: Ultra clean glass fiber paper • Retention: 0.3 Micron • Efficiency: 99.997% • Initial Pressure: 12 mm WG • Grade : H14 rating • Real-time display panel for remaining Filter lif 	
14	Pre Filters	<ul style="list-style-type: none"> • Media : Synthetic, non-woven polyester • Casing : Epoxy painted GI frame • Retention : 10 -15 micron • Efficiency : 90% • Initial Pressure: 6 mm WG • Grade : F7 rating 	
15	Noise level	< 65 decibel on “A” scale \pm 5 as per NSF 49	
16	Cabinet Control systems	<p>Should have</p> <ul style="list-style-type: none"> • Pressure gauge, • motor voltage regulator, • audible and visual window alarm, • main and outlet power circuit breakers, • Power switches for exterior mounted fluorescent lights and / or ultraviolet lights, interior outlets, and blower motor etc. 	
17	Illumination and light intensity	<p>Must deliver uniform lighting to the work surface for greater comfort, reduced glare and improved productivity</p> <p>High intensity, low wattage, >800 lux</p> <p>Choke less to withstand larger fluctuations in voltage,</p> <p>Must be placed in a position to avoid turbulence in working area.</p>	
18	UV germicidal lamp	<ul style="list-style-type: none"> • Germicidal UV lamp - Controlled by automatic UV lamp timer (lamp hours) • Emission of 254 nm • Lamp should be positioned away from operator line of sight for safety and proper exposure to interior surfaces. • UV lamp should be in working zone (40 micro watts/ square cm at 254 nm or better) • The UV lamp should automatically switch “off” when the front door is opened to avoid accidental exposure of UV rays to the users’. 	
19	Alarms	<ul style="list-style-type: none"> • An audio alarm must be installed to indicate loss of exhaust flow. 	

		<ul style="list-style-type: none"> • Should have Audible alarm to warn the operator if the window is raised above the recommended height 	
20	Certification required	<ul style="list-style-type: none"> • Test Certificate for Mini-Pleat HEPA Filters • Calibration Certificate for Pressure Gauge • Calibration Certificate for Air Velocity Anemometer, • Warranty Certificate 	
21	BSC standard compliance	<ul style="list-style-type: none"> • Meet American (NSF/ANSI) or European standard EN 12469 (type tested) or both 	
22	Power Supply	<ul style="list-style-type: none"> • Power supply should have 220-240 V, 50 Hz. And all components UL listed and CE marked Electric supply requirement 	
23	Operation and maintenance training component	<ul style="list-style-type: none"> • 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 	
24	Certificates Performance and safety standards (specific to the device type);Local and/or international	<ul style="list-style-type: none"> • 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 	
25	Supplier/ Manufacturer	<ul style="list-style-type: none"> • Must be ISO certified for quality 	
26	Service Support Contact details (Hierarchy Wise; including a toll free/landline number)	<ul style="list-style-type: none"> • Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer; 	
27	Recommendations or warnings	<ul style="list-style-type: none"> • Any warning signs would be adequately displayed 	
28	Warranty	<ul style="list-style-type: none"> • Warranted for 2 years after satisfactory installation and working excluding consumable parts and accessories. 	
29	Comprehensive Maintenance	<ul style="list-style-type: none"> • 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	
30	Service contract clauses, including prices	<ul style="list-style-type: none"> List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached; 	
31	Operating manuals, service manuals, other manuals	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> 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 	
32	Payment	Payment only after installation, validation and performance demonstration	

Vertical Autoclave

S. No.	Specifications	Requirement	Yes/No
1	Application	A vertical steam sterilizer to provide safe, economical and effective sterilization for laboratories that do not want to compromise on quality, safety and reliability and 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.	Chamber	Vertical loading type chamber with service basket and complying to the strictest international directives and standards equipped with <ul style="list-style-type: none"> • Steam collection bottles to removes most of the steam during operation • Ware inlet and outlet valve • Drain valve for cleaning or changing with fresh water • Constructed with appropriate stainless steel with superior corrosion resistance to water and steam • High temperature and pressure resistant silicon gasket • Built-in analog pressure gauge • Manual pressure release valve • Wheels/casters for easy transport. 	
3	Chamber size/Capacity	Approx. 80-120 lit	
4	Gauges	<ul style="list-style-type: none"> • Should have a water level gauge • Analog gauges for measuring inner and outer steam pressure. • Should have an inner temperature indicator. 	
5.	Chamber size/Capacity	Approx. 80-120 L	
6.	Display	<ul style="list-style-type: none"> • Fully Automatic PID Control ± 0.1 °C • LED display for temperature and remaining time 	
7	Operating Temperature and accuracy	<ul style="list-style-type: none"> • Maximum 123°C • Temperature Accuracy : ± 0.5 °C at 121 °C • Must have Temperature calibration 	

		function	
8	Operating pressure and gauge	<ul style="list-style-type: none"> • 15 -20 psi • ANALOG PRESSURE GAUGE (0 - 400 psi pressure guage) indicating actual pressure 	
9	Timer	Automatic START/STOP timer	
10	Safety warnings and alarms	<ul style="list-style-type: none"> • 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	Accessories	<ul style="list-style-type: none"> • Perforated corrosion free baskets made up of SS 304 (3-4 Nos.) that are stackable two high or even more levels, • Silicone gasket 	
12	Calibration certificates	Certificate from ISO17025 accredited lab for temperature, pressure gauges & timer.	
13	Operation and maintenance training component	<ul style="list-style-type: none"> • 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	Certificates Performance and safety	<ul style="list-style-type: none"> • Should be FDA/CE/BIS approved product. 	

	standards (specific to the device type);Local and/or international	<ul style="list-style-type: none"> • Manufacturer and Supplier should have ISO 13485 certification under ISO 9001 for quality standards. • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements(or equivalent BIS Standard) • Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety 	
15	Supplier/ Manufacturer	<ul style="list-style-type: none"> • Must be ISO certified for quality 	
16	Service Support Contact details (Hierarchy Wise; including a toll free/landline number)	<ul style="list-style-type: none"> • Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer; 	
17	Recommendations or warnings	<ul style="list-style-type: none"> • Any warning signs would be adequately displayed 	
18	Warranty	<ul style="list-style-type: none"> • Warranted for 2 years after satisfactory installation and working excluding consumable parts and accessories. 	
19	Comprehensive maintenance	<p>Comprehensive Maintenance of the equipment supplied, installed, commissioned for 60 months after 2 year Warranty/Defects Liability Period. This will include 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</p>	

		in attending faults / maintenance	
20	Service contract clauses, including prices	<ul style="list-style-type: none"> 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; 	
21	Operating manuals, service manuals, other manuals	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> 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 	
22	Payment	Payment only after installation, validation and performance demonstration	

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

	Specifications	Requirement	Yes/No
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	<ul style="list-style-type: none"> • Double walled construction with complete inner chamber made of Corrosion resistant stainless steel (AISI 430) • Outer chamber should be of steel sheet finished with powder coated point Insulation to maintain desired temperature • Inner glass door • Inner chamber should be fabricated with ribs for adjusting shelves to convenient height and shelves to be supplied • Shelves should be made of polished stainless steel sheet as per chamber 	
3	Capacity	<ul style="list-style-type: none"> • 150- 200 liters 	
4	Temperature range	<ul style="list-style-type: none"> • Temperature should be thermostatically controlled • Temperature should be thermostatically controlled with range 1) $\pm 2^{\circ}$ C Ambient to 70° C and 2) 5 °C to 50°C • Over-Temperature Cut-Off with audio/ visual alarm • Low Temperature Warning alarm 	
5	Unit	<ul style="list-style-type: none"> • Air ventilators to be provided on both side • The equipment should be provide with microprocessor controlled digital display • Temperature homogeneity between top and bottom shelves should be maintained by forced circulation 	
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"> • 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 	
8	Certificates Performance and	<ul style="list-style-type: none"> • Should be FDA/CE/BIS approved product. • Manufacturer and Supplier should have ISO 	

	safety standards (specific to the device type);Local and/or international	<p>13485 certification under ISO 9001for quality standards.</p> <ul style="list-style-type: none"> Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements(or equivalent BIS Standard) Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety 	
9	Supplier/ Manufacturer	<ul style="list-style-type: none"> Must be ISO certified for quality 	
10	Service Support Contact details (Hierarchy Wise; including a toll free/landline number)	<ul style="list-style-type: none"> Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer; 	
11	Recommendations or warnings	<ul style="list-style-type: none"> Any warning signs would be adequately displayed 	
12	Warranty	<ul style="list-style-type: none"> Warranted for 2 years after satisfactory installation and working excluding consumable parts and accessories. 	
13	Service contract clauses, including prices	<ul style="list-style-type: none"> 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; 	
14	Operating manuals, service manuals, other manuals	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> 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 	
15	Payment	Payment only after installation, validation and performance demonstration	

Digital colony counter

S. No.	Specifications	Requirement	Yes/No
1	Application	For fast and accurate bacterial or mold colony counting and to aid in determining counts of colony clusters and exceedingly large or small colonies, and can accommodate multiple dish sizes or formats.	
2.	Material construction of	Full Stainless steel fabricated body with duly heat cured epoxy coating.	
3	Display and counting	<p>It should consist of</p> <ul style="list-style-type: none"> • Digital display up to 4 digits with confirmation by audible tone. • It should consist of Magnifying lens (greater than 2X magnification with digital marking pen) • Accepts petri dish upto size 120 mm diameter with a centering adaptor for standard 90mm petri dish • Glare free viewing low energy bright LED's • A switchable black background viewing translucent and difficult to see colonies. • Zero reset button 	
4.	Operation and training component	<ul style="list-style-type: none"> • 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 	
5	Certificates Performance and safety standards (specific to the device type);Local and/or international	<ul style="list-style-type: none"> • 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) <ul style="list-style-type: none"> • Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety 	
6	Supplier/ Manufacturer	<ul style="list-style-type: none"> • Must be ISO certified for quality 	
7	Service Support Contact details (Hierarchy Wise; including a toll free/landline number)	<ul style="list-style-type: none"> • Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer; 	
8	Recommendations or warnings	<ul style="list-style-type: none"> • Any warning signs would be adequately displayed 	
9	Warranty	<ul style="list-style-type: none"> • Warranted for 2 years after satisfactory installation and working excluding consumable parts and accessories. 	
10	Service contract clauses, including prices	<ul style="list-style-type: none"> • 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; 	
11	Operating manuals, service manuals, other manuals	Should provide 2 sets(hardcopy and soft-copy) of:- <ul style="list-style-type: none"> • 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 	
12	Payment	Payment only after installation, validation and performance demonstration	

Lab Blender (Paddle type)

Sl. no.	Specifications	Requirement	Yes/No
1	Application	A powerful compact and ergonomic lab blender adapted for optimal homogenization and bacterial extraction without cross contamination	
2/	Unit	<ul style="list-style-type: none"> • Should have chamber of stainless steel with an opening door • Should have multi-function digital display Provision of adjustable blending power with on screen indicator. • Should have provision of removable paddles for cleaning and autoclaving • Should have facility for side by side paddle stop. • Provision of fully opening door facility for easy cleaning. 	
2.	Disposable bag size	Appropriate to the model & capacity quoted	
3.	Capacity	50-400 ml	
5.	Temperature	Ambient operating temperature 10-35°C.	
6.	Humidity range	Operating relative humidity range should be 10-89%	
7.	Adjustable timer settings	1sec-60 mins.	
8.	Paddle speed	Variable speed (4-10 strokes /sec or better	
9	Sensor	To ensures immediate stop of blending in the event of a leakage	
10	Accessories	Bags (1000 numbers), Bag clips (50 numbers) Bag storage rack/stand (2 numbers) Bag sealer	
11	Operation and training component	<ul style="list-style-type: none"> • 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	
12	Certificates Performance and safety standards (specific to the device type);Local and/or international	<ul style="list-style-type: none"> • 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 	
13	Supplier/ Manufacturer	<ul style="list-style-type: none"> • Must be ISO certified for quality 	
14	Service Support Contact details (Hierarchy Wise; including a toll free/landline number)	<ul style="list-style-type: none"> • Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer; 	
15	Recommendations or warnings	<ul style="list-style-type: none"> • Any warning signs would be adequately displayed 	
16	Warranty	<ul style="list-style-type: none"> • Warranted for 3 years after satisfactory installation and working excluding consumable parts and accessories. 	
18	Service contract clauses, including prices	<ul style="list-style-type: none"> • List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached; 	
19	Operating manuals, service manuals, other manuals	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> • 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; <ul style="list-style-type: none"> • Advanced maintenance tasks documentation; • Certificate of calibration and inspection 	
20	Payment	Payment only after installation, validation and performance demonstration	

Serological Water Bath

S.no	Specification	Requirement	Yes/No
1	Application	The water bath is for routine use in microbiology protocols as well for solubilisation with precise temperature control.	
2	Material of construction	<ul style="list-style-type: none"> • Rounded, seamless stainless steel bath to preventing rust, chemical damage and contamination. • Powder coating like epoxy coating exterior for easy cleanup • Corrosive resistant stainless steel Gabled drip free lid 	
3	Unit	<ul style="list-style-type: none"> • Microprocessor controlled digital display. • Instrument should have lift up drip free bath cover; • Carrier racks should be given for flasks and test tubes racks. • Convenient water bath drains. • Water bath protective media should be there to prevent contamination and formation of algae. • Easy cleaning 	
4	Temperature	<ul style="list-style-type: none"> • Temperature Range: +20°C to 99°C • Temperature Accuracy: ± 0.2 °C at 37.0°C • Temperature Uniformity: ± 0.5 °C at 37.0°C • Digital LED display for operating status of TEMP • Over-Temperature Cut-Off • Temperature calibration function 	
5	Alarms	<ul style="list-style-type: none"> • Audible warning safety signals should be there for high/low temperature warnings • Low liquid level 	
6	Calibration	<ul style="list-style-type: none"> • Certificate from a ISO 17025 accredited lab for 3 different temperature points 	
7	Operation and training component	<ul style="list-style-type: none"> • 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	
8	Certificates Performance and safety standards (specific to the device type); Local and/or international	<ul style="list-style-type: none"> • Should be FDA/CE/BIS approved product. • Manufacturer and Supplier should have ISO 13485 certification under ISO 9001 for quality standards. • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent BIS Standard) • Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety 	
9	Supplier/ Manufacturer	<ul style="list-style-type: none"> • Must be ISO certified for quality 	
10	Service Support Contact details (Hierarchy Wise; including a toll free/landline number)	<ul style="list-style-type: none"> • Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer; 	
11	Recommendations or warnings	<ul style="list-style-type: none"> • Any warning signs would be adequately displayed 	
12	Warranty	<ul style="list-style-type: none"> • Warranted for 3 years after satisfactory installation and working excluding consumable parts and accessories. 	
13	Service contract clauses, including prices	<ul style="list-style-type: none"> • 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; 	
14	Operating manuals, service manuals, other manuals	<p>Should provide 2 sets (hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> • 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 	
15	Payment	Payment only after installation, validation and performance demonstration	

Analytical Balance

S. No.	Specifications	Requirement	Yes/No
1	Application	Required to measure mass to a high degree of precision with a weighing capacity typically 200 g and a readability of 0.1 mg – 0.001 mg and protected by a draft shield or an enclosure.	
2	Operational Requirements	It should have <ul style="list-style-type: none"> • Microprocessor based single pan top loading analytical balance with high accuracy and precision. • Reading of the weight by digital display • Balance with transparent case. • Weighing with automatic and manual start and provision for data interface. 	
2.	Technical Specifications	<ul style="list-style-type: none"> • Weigh accurately up to 3rd decimal place. • Fully automatic time and temperature controlled internal calibration and balance should be capable to adjust itself Auto zero setting. • Weighing capacity up to 200g Readability 0.1 mg Repeatability 1 mg or less. Setting time 1.5 secs. 	
3.	Balance should have	<ul style="list-style-type: none"> • Fast dismantling chamber for easy clean up 	
4.	Environmental factors	<ul style="list-style-type: none"> • Safety for electromagnetic compatibility. • The unit shall be capable of operating in ambient temperature of 20-30 deg C and relative humidity of 80%. 	

5.	Accessories	<ul style="list-style-type: none"> All necessary accessories should be provided with unit. 	
6.	Calibration certificate	Certificate from a ISO 17025 accredited lab for 3 different weights.	
7	Operation and training component	<ul style="list-style-type: none"> 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 	
8	Certificates Performance and safety standards (specific to the device type);Local and/or international	<ul style="list-style-type: none"> 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 	
9	Supplier/ Manufacturer	<ul style="list-style-type: none"> Must be ISO certified for quality 	
10	Service Support Contact details (Hierarchy Wise; including a toll free/landline number)	<ul style="list-style-type: none"> Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer; 	
11	Recommendations or warnings	<ul style="list-style-type: none"> Any warning signs would be adequately displayed 	
12	Warranty	<ul style="list-style-type: none"> Warranted for 3 years after satisfactory installation and working excluding consumable parts and accessories. 	

13	Service contract clauses, including prices	<ul style="list-style-type: none"> • 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; 	
14	Operating manuals, service manuals, other manuals	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> • 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 	
15	Payment	Payment only after installation, validation and performance demonstration	

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

S no.	Specifications	Requirement	Yes/No
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"> • Interior: Full stainless steel which can be easily cleaned and eliminates any possibility of cross contamination • Cooling Type : Direct cooling • Should be Vertical(Upright)type • Microprocessor-based • Frost Free • Refrigerant : CFC – Free • Easy to read, LED control panel and alarm status with integrated diagnostics • Doors with key lock • Built in Voltage stabilizer/battery back-up for 48h or more • Castors for easy movability 	
3.	Capacity	Capacity: 250 L or higher with a combination of sealed 5-7 pullout drawers / shelves of different sizes that can be adjusted for storage flexibility	
4.	Temperature	<ul style="list-style-type: none"> • Range - 10 ~ - 25 °C with temperature controller • Digital temperature display • LED Display for temperature and temperature history which can be downloaded via a USB port • Calibration facility 	
5	Alarms	Acoustic/visual Safety alarms for <ul style="list-style-type: none"> • 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"> 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 	
10	Certificates Performance and safety standards (specific to the device type);Local and/or international	<ul style="list-style-type: none"> 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 	
11	Supplier/ Manufacturer	<ul style="list-style-type: none"> Must be ISO certified for quality 	
12	Service Support Contact details (Hierarchy Wise; including a toll free/landline number)	<ul style="list-style-type: none"> Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer; 	
13	Recommendations or warnings	<ul style="list-style-type: none"> Any warning signs would be adequately displayed 	
14	Warranty	<ul style="list-style-type: none"> Warranted for 3 years after satisfactory installation and working excluding consumable parts and accessories. 	
15	Comprehensive Maintenance	Comprehensive Maintenance of the equipment supplied, installed, commissioned for 60 months	

		<p>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</p>	
16	Service contract clauses, including prices	<ul style="list-style-type: none"> List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached; 	
17	Operating manuals, service manuals, other manuals	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> 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 	
18	Payment	Payment only after installation, validation and performance demonstration	

Specifications of UV-VIS Spectrophotometer

S no.	Specifications	Requirement	Yes/No
1	Application	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	System	A fully automated spectrophotometer with double beam optics with pre-programmed applications using conventional quartz / glass/plastic cuvettes with all the required accessories.	
3	Operation keys	<ol style="list-style-type: none"> 1. Instrument should operate immediately after switch on with no warming up time 2. Should be automatically programmed with on-board touch screen & soft keys 3. Capable to store method with analysis:> 100 method programs on the instrument, > 1000 results with data, evaluation results and used parameters 	
4.	Optical Design	<ul style="list-style-type: none"> • Double Beam with sample and reference cuvette positions; Czerny-Turner Monochromatic/Holographic grating with sealed optics • Reference Compartment Should accommodate cells up to 10 mm path length as standard feature 	
5	Light Source	(1) Halogen lamp for Visible range (2) Deuterium Lamp for UV range, light source should be auto automatically selected as per wavelength required.	
6	Detector	Silicon Photodiode dual detector/PMT	
7	Scan Ordinate Modes	Absorbance, % Transmittance, % Reflectance	
8	Resolution	0.1nm or better.	
9	Wavelength Range	180 –1100 nm	
10	Wavelength Accuracy	± 0.3nm or better for entire range	
11.	Wavelength Repeatability	± 0.1nm or better	
12.	Scanning Speed	Selectable Variable wavelength scan rate 10nm/min to 2500 nm/min or	
13	Spectral Bandwidth	Variable(0.1/0.2/0.5/1/2/5) nm	

14.	Photometric Range	Absorbance = -4.5 to 4.5 Abs or better. Transmittance & reflectance 0 to 80000 % or better.	
15	Photometric Accuracy	0.5 A: $\pm 0.004A$; 1A: $\pm 0.006A$; 2A: $\pm 0.010A$; (440 nm; traceable neutral density filters)	
16	Stray Light	Max. 0.005% (220 nm NaI) or better, Max. 0.005% (340,370 nm NaNO ₂) or better Max. 1% (198 nm KCl) or better	
17.	Noise	0.00005 Abs RMS (500nm) or better	
18.	Drift	< 0.0005 A/hr (500 nm, 1 hour warm-up)	
19	Baseline flatness	± 0.0005 Abs or better	
20	Application Software	<p>Compatible Software should be user friendly & simple for data handling with feature like easy to use report publisher, online help and answer wizard, GLP & audit trail and fully compatible with Windows.</p> <p>System built in features such as real time display of concentration, time scan, photometric mode, single/multi-wavelength , capability for event recording (e.g., addition of reagents)</p> <p>Software should have built in</p> <p>a. Methods:</p> <ul style="list-style-type: none"> • Absorbance with one or more wavelengths, • Scans, Nucleic acids, Proteins, OD 600, • Evaluation: via factor, standard and calibration curve • Dual wavelength with subtraction and division evaluation <p>b. Method dependent evaluation:</p> <ul style="list-style-type: none"> • Absorbance, concentration via factor and standard • Concentration via standard series using Linear regression, Nonlinear regression with 2nd and 3rd degree polynomials • Spline analysis, • Linear interpolation (point to point evaluation) • Absorbance allocation via subtraction and division • Ratio 260/280, 260/230, Molar concentration and total yield for nucleic acids. <p>The software should be 21CFR part 11</p>	

		compliant.	
21	Accessories and spares	<ul style="list-style-type: none"> • One pair each of of 0.5, 1 and 3 ml quartz cuvettes 10 mm path length • One pair each of of 0.5, 1, and 3 ml glass cuvettes 10 mm path length • Cuvette holder • Deuterium Lamp • Halogen lamp • Holmium oxide glass filters for wavelength calibration. • NIST traceable Potassium dichromate 	
22	Computer and printer	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	
23	UPS	Suitable UPS with 60 mins backup power	
24	Calibration	Certificate from an ISO 17025 accredited lab spectral calibration.	
25	Compliance	IQOQPQ of instrument and Software should be provided along with document	
26	Operation and training component	<ul style="list-style-type: none"> • 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 	
27	Certificates Performance and safety standards (specific to the device type);Local and/or international	<ul style="list-style-type: none"> • 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 	
28	Supplier/Manufacturer	<ul style="list-style-type: none"> • Must be ISO certified for quality 	

29	Service Support Contact details (Hierarchy Wise; including a toll free/landline number)	<ul style="list-style-type: none"> Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer; 	
30	Recommendations or warnings	<ul style="list-style-type: none"> Any warning signs would be adequately displayed 	
31	Warranty	<ul style="list-style-type: none"> Warranted for 3 years after satisfactory installation and working excluding consumable parts and accessories. 	
32	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	
33	Service contract clauses, including prices	<ul style="list-style-type: none"> 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; 	
34	Operating manuals, service manuals, other manuals	Should provide 2 sets(hardcopy and soft-copy) of:- <ul style="list-style-type: none"> 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; 	

		<ul style="list-style-type: none"> • Advanced maintenance tasks documentation; • Certificate of calibration and inspection 	
35	Payment	Payment only after installation, validation and performance demonstration	9

Binocular Microscope

S no.	Specifications	Requirement	Yes/No
1	Application	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	Body	<ul style="list-style-type: none"> • Body-Single mold sturdy stable base stand, inclined Binocular body 30 °, 360° rotatable head with focus adjustment controls. • A durable textured acid resistant finish • All optical parts including objectives, eye pieces and prisms should have anti-reflective coating which also gives anti-fungal property. • All metallic parts should be corrosion-proof, acid proof and stain-proof. 	
3.	Eye piece	<ul style="list-style-type: none"> • -Highest quality 10 X/20mm wide angle anti fungus field eyepiece. One with pointer. Diopter adjustment must be present on both eye pieces. (the image of the object as seen through the binocular eyepiece should be well defined centrally in at least 2/3 field of view) • Achromatic, wide field, 10 x with inbuilt pointer. • The eyepiece should be aplanatic and have a minimum field number of 18 Diopter adjustment must be present on one/ both eye pieces or on the eye piece tube. 	
3.	Optical system	<ul style="list-style-type: none"> • Optical system should be infinity corrected. • Built-in LED light source with white light with intensity control and LED life of more than 10, 000 Hrs. 	
4.	Objective	<ul style="list-style-type: none"> • -Parfocal, antifungal coated 4×, 10×, 40×and 100× (oil immersion) with semi planner achromatic correction. • Objective should be well centered even if their position on turret is changed. 	

		<ul style="list-style-type: none"> • 10× and 40× objectives should have numerical apertures of 0.25 and 0.65 respectively. • 100× should have numerical aperture of 1.25 and should be of oil immersion. • Unbreakable containers to be provided for storing the objectives. • All objectives should be wide field, achromatic and par focal. 	
5.	Nose piece	<ul style="list-style-type: none"> • Backward tilted revolving nose piece suitable to accommodate four objectives with click stop • . It should be provided with rubber ribbed grip for easy rotation mounted on a precision ball bearing mechanism for smooth and accurate alignment. Extra ports if any should be fitted with dust & fungal proof metallic/ebonite caps. 	
6	Focusing:	<ul style="list-style-type: none"> • . Coaxial coarse and fine focusing knob, capable of smooth, fine focusing movement sensitivity; minimum: 300 micron; focusing stop for slide safety. .. 	
7	Stage	<ul style="list-style-type: none"> • Stage uniformly horizontal, mechanical stage having dimensions of length 140 mm (+/- 20mm) with fine Vernier graduations (minimum reading accuracy of 0.1 mm). • It should be designed with convenient sub-stage vertical coaxial adjustment for slide manipulation. • The stage should have ball-bearing arrangement to allow smooth travel in transverse directions i.e. 80 mm (+/- 5mm) and front to back direction, 50mm (+/- 5mm). 	
8.	Sub-stage condenser	<ul style="list-style-type: none"> • Abbe-type condenser with numerical aperture (N.A.) 1.25 focusable with rack and pinion arrangement incorporating a spherical lens and an iris-diaphragm 	

9.	Sub-stage illuminator	<ul style="list-style-type: none"> • The system should have a build-in variable light source (Illuminator). • This light source should have a 20 W, 6 V Halogen lamps. • The system should be provided with a step down transformer and an on-off switch and intensity control. • The lamp should be provided with a lamp socket which has the facility for easy replacement of the bulb 	
10.	Power supply & protection	<ul style="list-style-type: none"> • Voltage 220 V AC, 50Hz. should have one on-off power switch • A plano-concave mirror in fork mounting should be supplied which would be attachable to the base for field use when power is not available. • Should have over-charging cut-off with visual symbol 	
11	Battery backup	<ul style="list-style-type: none"> • Minimum 1 Hour 	
12	Operating and storage conditions	<ul style="list-style-type: none"> • Capable of operating continuously in ambient temperature of 10 to 50 °C and relative humidity of 15 to 90% in ideal circumstances. • Storage condition: Capable of being stored continuously in ambient temperature of 0 to 50 °C and relative humidity of 15 to 90% 	
13	Manual Accessories	<ul style="list-style-type: none"> • Working manual should be provided with each microscope. • Immersion oil 25 ml × 2 • lens tissue paper 2 rolls or boxes) • Lens cleaning solution (100 ml) • One anti-static cleaning brush. • The unit shall be capable of being stored continuously in ambient temperature of 0 -50 deg C and relative humidity of 15-90%. 	
14.	Digital camera	<ul style="list-style-type: none"> • 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 along with 	

		PC (i5 6200U processor, 6 GB RAM, 1 TB HDD, DVR R/W, LED 20"). With UPS (minimum offline backup of 30 minutes).	
15	Certificates Performance and safety standards (specific to the device type);Local and/or international	<ul style="list-style-type: none"> • Should be FDA/CE/BIS approved product. • Manufacturer and Supplier should have ISO 13485 certification under ISO 9001for quality standards. • TVU Cert • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements(or equivalent BIS Standard) • Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety 	
16	Supplier/ Manufacturer	<ul style="list-style-type: none"> • Must be ISO certified for quality 	
17	Service contract clauses, including prices	<ul style="list-style-type: none"> • List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached; 	
18	Operating manuals, service manuals, other manuals	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> • 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 	
19	Warranty	<ul style="list-style-type: none"> • Warranted for 3 years after satisfactory installation and working excluding consumable parts and accessories. 	
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 and maintenance training	The supplier will have to carry out successful installation at our laboratory premises (where ever the system has to be installed) and provide on – site comprehensive training for scientific personnel operating the system and support services till customer satisfaction with the system.	
22	Payment	Payment only after installation, validation and performance demonstration	

Howard Mold Counter (Proprietary)

S. No	Specification	Requirement	Yes/No
1.	Application	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 mold mycelia in butter and cream..	
2.	Counting chamber	Constructed entirely of glass. Centre of glass should contain a 15x20mm rectangle that is flanked by 0.1 mm shoulders on each side to support cover glass Rectangle and Cover glass should have optically plane surfaces Facilities for calibration of microscope	
3.	Eyepiece micrometer	Ruled into squares (grid), each of which is equal to 1/6 of the diameter of the eyepiece diaphragm opening	
4.	Cover slips	Thin 28mm x 33mm x 0.5mm 2 Nos Thick 28mm x 33mm x 1.0mm 2 Nos	
5.	Certificates Performance and safety standards (specific to the device type);Local and/or international	<ul style="list-style-type: none"> • Should be FDA/CE/BIS approved product. • Manufacturer and Supplier should have ISO 13485 certification under ISO 9001 for quality standards. • TVU Cert 	
6.	Service contract clauses, including prices	<ul style="list-style-type: none"> • List of all spares and accessories (including minor) with part numbers and price, required; 	
7.	Demonstration and training	The supplier will have to carry out successful demonstration at our laboratory premises (where ever 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.	Payment	Payment only after demonstration, validation and performance demonstration	
9.	Certificates Performance and safety standards (specific to the device type);Local and/or international	<ul style="list-style-type: none"> • Should be FDA/CE/BIS approved product. • Manufacturer and Supplier should have ISO 13485 certification under ISO 9001 for quality standards. 	
10.	Payment	Payment only after validation and performance demonstration	

Refrigerated Centrifuge

S. No.	Specifications	Requirement	Yes/No
1.	Application	A Multi-functional, general purpose High speed refrigerated bench top centrifuge with both fixed angle and swinging bucket rotors for sedimentation of samples with easy lift and safety lid	
2.	Base unit	<ul style="list-style-type: none"> • Table top centrifuge with maintenance free brushless motor and have low access height • CFC free refrigerant • LCD Digital Display of time, speed and Temperature and run conditions • Compatible with all fixed angle and swinging bucket rotors • Automatic rotor recognition facility • Automatic imbalance detection and cut-off • Should be programmable with easy preset programs for fast temperature for pre-cooling and short spin. • Should have motorized lid lock system 	
3.	Temperature range	<ul style="list-style-type: none"> • -5°C to 40 °C 	
4.	Speed	<ul style="list-style-type: none"> • Maximum speed: 15000 rpm (20000 RCF) with 8 × 50 mL Fixed angle rotor or better 	
5.	Rotors	<ol style="list-style-type: none"> 1. Fixed Angle Rotor for 8×50 ml Falcon tube with 8 adapters for 15 mL conical bottom culture tubes/falcon/oak ridge 2. Rotor for 1.5-2.0 mL Eppendorf tubes (24 places or better) and adaptors for 0.2 and 0.5 mL tubes 3. Deep-well micro plates rotor (Four 96 well plates) 4. Swing out rotor: <ul style="list-style-type: none"> • Should have at least 4 × 100 ml of capacity Maximum RCF produced should be 3200 x g or above • Four buckets should be provided (either round or rectangular buckets) • Adaptors for 15 ml conical bottom centrifuge tubes & 50 ml conical 	

		<p>bottom centrifuge tubes should be provided (two adapters for 6 or 8 ×15 ml and two adapters for 2 or 4×50 ml)</p> <ul style="list-style-type: none"> • Rotor and buckets should be autoclavable. <p>All rotors should be autoclavable</p>	
6.	Centrifuge tubes	<ul style="list-style-type: none"> • Suitable 15 mL auto-clavable screw capped tubes -24 Nos • Suitable 50 mL auto-clavable screw capped tubes -24 Nos 	
7.	Power requirement	<ul style="list-style-type: none"> • 220 v to 240 v -50 Hz If a voltage stabilizer is required, it should be supplied along with the unit 	
8.	Voltage stabiliser	<ul style="list-style-type: none"> • Suitable voltage stabilizer to be provided 	
9.	Certificates Performance and safety standards (specific to the device type);Local and/or international	<ul style="list-style-type: none"> • 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 	
10.	Supplier/ Manufacturer	<ul style="list-style-type: none"> • Must be ISO certified for quality 	
11.	Service contract clauses, including prices	<ul style="list-style-type: none"> • List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached; 	
12.	Operating manuals, service manuals, other manuals	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> • 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; <ul style="list-style-type: none"> • Certificate of calibration and inspection 	
13.	Warranty	<ul style="list-style-type: none"> • Warranted for 3 years after satisfactory installation and working excluding consumable parts and accessories. 	
14.	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	
15.	Operation and maintenance training	The supplier will have to carry out successful installation at our laboratory premises (where ever the system has to be installed) and provide on – site comprehensive training for scientific personnel operating the system and support services till customer satisfaction with the system.	
16	Payment	Payment only after installation, validation and performance demonstration	

BOD Incubator

S. No.	Specifications	Requirement	Yes/No
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	i) Outer wall: Powder coated steel sheet with resin baked finish 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) iii) Perforated Stainless Steel*Partition tray (6 nos.)	
3.	Doors	Double door type <ul style="list-style-type: none"> • 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. • Interior illumination • Outer Door: Powder coated steel sheet with resin baked finish 	
4.	Capacity	<ul style="list-style-type: none"> • 340 Liters 	
5.	Temperature Range	<ul style="list-style-type: none"> • 5°C to 60°C with digital controller, • Temperature increments 0.1° C 	
6.	Control Accuracy	<ul style="list-style-type: none"> • ± 0.1 °C or better (at 60°C). 	
7.	Distribution Accuracy/uniformity	<ul style="list-style-type: none"> • ± 1 °C or better (at 37°C). 	
8.	Temperature display	<ul style="list-style-type: none"> • Microprocessor based Digital display of temperature along with calibration certificate by 17025 accredited agency. • Temperature recorder for inner chamber with maintenance free 	

		battery backup and auto charging of battery	
9.	Air circulation	<ul style="list-style-type: none"> 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"> 30 min. up to 60 ° C without load. 40 min. up to + 5 ° C without load 	
11.	Timer	<ul style="list-style-type: none"> 0 to 24 hrs X 7 days cyclic ON / OFF timer for illuminating port 	
12.	Safety Alarms	<p>Provision for audio-visual alarm to indicate</p> <ul style="list-style-type: none"> Door opening after 2 min. Self -diagnosis function including overheat Prevention and overcurrent Protection 	
13.	Computer Interface	RS 485 / RS232 interface for multiple & single communication port	
14.	Voltage stabilizer	Automatic Stabilizer, 4 KVA with TDR (3minutes) electronic type	
15.	Documents Certificates Performance and safety standards (specific to the device type);Local and/or international	<ul style="list-style-type: none"> 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 Complete with IQ, OQ, PQ, Documents, Operations and Maintenance manuals 	
16.	Supplier/ Manufacturer	<ul style="list-style-type: none"> Must be ISO certified for quality 	
17.	Service contract clauses, including prices	<ul style="list-style-type: none"> List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached; 	
18.	Operating manuals, service manuals, other manuals	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> User, technical and maintenance manuals 	

		<p>to be supplied in English language along with machine diagrams;</p> <ul style="list-style-type: none"> • 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 	
19.	Warranty	<ul style="list-style-type: none"> • Warranted for 3 years after satisfactory installation and working excluding consumable parts and accessories. 	
20.	Comprehensive Maintenance	<p>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</p>	
21.	Operation maintenance & training	<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>	
22.	Payment	<p>Payment only after installation, validation and performance demonstration</p>	

Micro Filtration Unit

1.	Application	Used for the collection and preparation of samples, mobile phases, and buffers to obtain the highest quality results from downstream analysis	
2.	All-Glass Filter Holder	With borosilicate glass funnel and base, anodized aluminum spring clamp, silicone stopper, coarse-frit glass filter support and PTFE-faced funnel and base for <ol style="list-style-type: none"> 1. 47 mm disc filters 2. 90 mm disc filters 3. 25 mm filters 	
3.	Stainless Steel Vacuum Filter Holders	Analytical Filter Holders For 25 and 47 mm disc filter.	
4.	Filtering Flasks	Side arm connects to vacuum source with 3/8in. I.D. hose. 1 L and 4 L flasks accept no. 8 perforated stopper. 125 mL flask accepts no. 5 stopper.	
5.	Filter Forceps	Highly polished stainless steel forceps blades with beveled, unserrated tips to prevent damaging the membrane filter.	
6.	Oil less vacuum pump	flow rates of up to 37 L/min	
7.	Membrane Filters	Filters 47mm, 90 mm and 25 mm for <ol style="list-style-type: none"> a) Aqueous solvents b) Hydrophobic solvents 	
8.	Payment	Payment only after installation, and performance demonstration	

Digital pH/mV meter

S no.	Specifications	Requirement	Yes/No
1.	Application	For research with a comprehensive range of features and functions, making it suitable for general laboratory, QC and GLP based applications.	
2.	Unit	Consisting of Tri-combination pH/ATC electrode with an electrode holder/arm with smooth movement and protection cover	
3.	Working pH Range	0 – 14 pH	
4.	pH resolution	± 0.01 pH	
5.	Mv	<ul style="list-style-type: none"> • Range 0 - ± 1999 • Accuracy ± 1mV • Resolution 1 mV 	
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"> • Should have 3 stage calibration with auto buffer recognition • NIST traceable buffer set 500 ml each (pH 4.0, 7.0 & 9.0). 	
9.	Alarm	<ul style="list-style-type: none"> • Calibration reminder interval (1 to 999hrs) 	
10.	Temperature Compensation	<ul style="list-style-type: none"> • Automatic 	
11.	Display	<ul style="list-style-type: none"> • Backlit blue LCD with operation icon • digital display with 0.001 pH unit readability 	
12.	Accessories	<ul style="list-style-type: none"> • Extra Electrode • NIST Standard buffer solution (pH 4.0, 7.0, 10.01 x 500ml for each bottle) • standard electrode holder • Ac /DC Adaptor. 	
13.	Power	<ul style="list-style-type: none"> • 9V DC 	
14.	Data storage& Output	<ul style="list-style-type: none"> • Data storage facility and 	

		<p>record maximum and minimum value.</p> <ul style="list-style-type: none"> • RS.232C output and supply Data connector cable. 	
15.	Documents Certificates Performance and safety standards (specific to the device type);Local and/or international	<ul style="list-style-type: none"> • Manufacturer and Supplier should have ISO 13485 certification under ISO 9001 for 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 • Complete with IQ, OQ, PQ, Documents, Operations and Maintenance manuals 	
16.	Supplier/ Manufacturer	<ul style="list-style-type: none"> • Must be ISO certified for quality 	
17.	Service contract clauses, including prices	<ul style="list-style-type: none"> • List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached; 	
18.	Operating manuals, service manuals, other manuals	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> • User, technical and maintenance manuals to be supplied in English language along with machine diagrams; • List of equipment and procedures required for local calibration and routine maintenance; • Service and operation manuals (original and copy) to be provided; ; • Certificate of calibration and inspection 	
	Payment	Payment only after installation, validation and performance demonstration	

Fumigator

Sl. No.	Specifications	Requirement	Yes/No
1.	Capacity	<ul style="list-style-type: none"> 5 liters with easy cleaning facility 	
2.	Material of construction	<ul style="list-style-type: none"> Body should be compact, durable, leak proof and made of stainless steel /heavy duty plastic 	
3.	Particle size	<ul style="list-style-type: none"> It should produce aerosols with particle size of less than 5 microns The blower head should be rust proof inert to Formaldehyde, KMnO₄, H₂O₂ and deliver aerosols uniformly. 	
4.	Unit	<ul style="list-style-type: none"> It should be compatible with all disinfectant solutions usual concentration. It should be compatible with maximum pH range (both acid and alkali). The equipment should be of good quality and conform to national/ international standards. 	
5.	Power supply	<ul style="list-style-type: none"> The machine should operate on 220 +- 10 volts, 50 Hz, single phase, A.C Provided with Cable should be at least 5 meters in length, ISI marked. 	
6.	Operation	<ul style="list-style-type: none"> The discharge rate should not be less than 1Liter/25 minutes. 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). 	
	Operation and training component	<ul style="list-style-type: none"> 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 	
	Warranty	<ul style="list-style-type: none"> Warranted for 3 years after satisfactory working excluding consumable parts and accessories. 	
	Service contract clauses, including prices	<ul style="list-style-type: none"> List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in 	

		future after guarantee/warranty period should be attached;	
	Operating manuals, service manuals, other manuals	Should provide 2 sets(hardcopy and soft-copy) of:- <ul style="list-style-type: none"> • User, technical and maintenance manuals to be supplied in English language along with machine diagrams; • Service and operation manuals (original and copy) to be provided; • Advanced maintenance tasks documentation; • 	
	Payment	Payment only after satisfactory performance demonstration	

UV Viewing Cabinet

Sno.	Specificat ions	Requirement	Yes/ No
1.	Application	Eyes are protected by the UV filter in the viewing window and used for inspecting thin-layer chromatograms or other objects under UV light in absence of ambient light.	
2.	Unit	<ul style="list-style-type: none"> • User-safe, self-contained chamber with Convenient handling • Clear viewing window (open/close via hinged door) through button operation for each of two UV tubes • Homogeneous illumination of chamber 	
3.	Viewport	<ul style="list-style-type: none"> • Soft rubber viewport and contrast control filter that absorbs UV energy to protect the eyes 	
4.	UV tubes	Two UV tubes for illumination each 8W <ul style="list-style-type: none"> • Long-wave UV light 366 nm • Short-wave UV light 254nm) 	
5.	Safety timer	User safety through tilt sensor and timer (automatic switch-off after 10 min)	
6.	Operation and training component	<ul style="list-style-type: none"> • The supplier will have to carry out successful demonstration at the laboratory premises (where ever the system has to be installed) and provide on – site comprehensive training for a minimum of two scientific personnel operating the system till customer satisfaction 	
7.	Certificates Performance and safety standards (specific to the device type);Local and/or international	<ul style="list-style-type: none"> • 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) <ul style="list-style-type: none"> • Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety 	
8.	Supplier/ Manufacturer	<ul style="list-style-type: none"> • Must be ISO certified for quality 	
9.	Service Support Contact details (Hierarchy Wise; including a toll free/landline number)	<ul style="list-style-type: none"> • Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/ad-hoc) to be declared by the manufacturer; 	
10.	Recommendation s or warnings	<ul style="list-style-type: none"> • Any warning signs would be adequately displayed 	
11.	Warranty	<ul style="list-style-type: none"> • Warranted for 3 years after satisfactory working excluding consumable parts and accessories. 	
12.	Service contract clauses, including prices	<ul style="list-style-type: none"> • 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.	Operating manuals, service manuals, other manuals	Should provide 2 sets(hardcopy and soft-copy) of:- <ul style="list-style-type: none"> • User, technical and maintenance manuals to be supplied in English language along with machine diagrams; • Service and operation manuals (original and copy) to be provided; • Advanced maintenance tasks documentation; 	
14.	Payment	Payment only after satisfactory performance demonstration	

Anaerobic jar

S no.	Specifications	Requirement	Yes/ No
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"> • 12 liters total volume (1 no) • 3-4 Liters (1 No) 	
3.	Material of construction	<ul style="list-style-type: none"> • Transparent, unbreakable polycarbonate jar. 	
4.	Unit	<ul style="list-style-type: none"> • Jar should provided with pressure -cum -vacuum gauge attached to the lid • Jar should be ideal for all strict anaerobic test conditions. • Lid should consist of O- ring gasket. • It should be provided with petri dish (100 mm diameter) carrier/SS rack. • Schrader valve and screws to connect to vacuum pump 	
5.	Vacuum pump	<ul style="list-style-type: none"> • Suitable oil free vacuum pump for the system 	
6.	Accessories	<ul style="list-style-type: none"> • Catalyst/gas pouch startup kit • Anaerobe indicator tablets • Lid, complete with clamp and screw • O rings 	
7. 4.	Operation and training component	<ul style="list-style-type: none"> • 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 	
8.	Certificates Performance and safety standards (specific to the device	<ul style="list-style-type: none"> • Should be FDA/CE/BIS approved product. • Manufacturer and Supplier should have ISO 13485 	

	type);Local and/or international	<p>certification under ISO 9001 for quality standards.</p> <ul style="list-style-type: none"> • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements(or equivalent BIS Standard) • Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety 	
9.	Supplier/Manufacturer	<ul style="list-style-type: none"> • Must be ISO certified for quality 	
10.	Service Support Contact details (Hierarchy Wise; including a toll free/landline number)	<ul style="list-style-type: none"> • Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/ad-hoc) to be declared by the manufacturer; 	
11.	Recommendations or warnings	<ul style="list-style-type: none"> • Any warning signs would be adequately displayed 	
12.	Warranty	<ul style="list-style-type: none"> • Warranted for 3 years after satisfactory working excluding consumable parts and accessories. 	
13.	Service contract clauses, including prices	<ul style="list-style-type: none"> • 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; 	
14.	Operating manuals, service manuals, other manuals	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> • User, technical and maintenance manuals to be supplied in English language along with machine diagrams; • Service and operation manuals (original and copy) to be provided; • Advanced maintenance tasks documentation; 	
15.	Payment	Payment only after satisfactory performance demonstration	

Hot Air Oven

S. No.	Specifications	Requirement	Yes/No
1.	Application	For drying glassware and also for conditioning of heat sensitive media and to provide an optimal, homogeneous, temperature uniformity and stability to ensure drying is complete	
2.	Material of construction	<ul style="list-style-type: none"> • Should have double walled construction, with high quality insulated steel. Inner walls of 304 qualities SS, Outer walls of Epoxy Powder coated GI sheets. • Facility for adjustable shelves, 10 removable shelves to be provided. • With internal lighting facility, Insulated door fitted with heavy hinges, mechanical door lock. 	
3.	Capacity	<ul style="list-style-type: none"> • Approx. 200 liters 	
4.	Temperature range	<ul style="list-style-type: none"> • Temperature should be thermostatically controlled • It should be Ambient +5°C to 250°C with temperature setting accuracy ± 0.5 °C with forced air circulation for temperature uniformity • Separate PT 100 sensor and display for temperature (LED) • Safety alarms 	
5.	Unit	<ul style="list-style-type: none"> • Air ventilators to be provided on both side • The equipment should be provide with microprocessor controlled digital display • Temperature homogeneity between top and bottom shelves should be maintained by forced circulation 	
6.	Calibration	<ul style="list-style-type: none"> • Certificate from a ISO 17025 accredited lab for 3 different temperature points 	
7.	Power supply	<ul style="list-style-type: none"> • All electrical peripherals 	

		required for smooth functioning e.g. voltage stabilizers should be provided.	
8.	Accessories	<ul style="list-style-type: none"> Should have all the accessories required for the functioning of the equipment. 	
9.	Certificates Performance and safety standards (specific to the device type);Local and/or international	<ul style="list-style-type: none"> Should be FDA/CE/BIS approved product. Manufacturer and Supplier should have ISO 13485 certification under ISO 9001 for 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 	
10.	Supplier/Manufacturer	<ul style="list-style-type: none"> Must be ISO certified for quality 	
11.	Service Support Contact details (Hierarchy Wise; including a toll free/landline number)	<ul style="list-style-type: none"> Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/adhoc) to be declared by the manufacturer; 	
12.	Recommendations or warnings	<ul style="list-style-type: none"> Any warning signs would be adequately displayed 	
13.	Warranty	<ul style="list-style-type: none"> Warranted for 3 years after satisfactory working excluding consumable parts and accessories. 	
14.	Service contract clauses, including prices	<ul style="list-style-type: none"> List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached; 	
15.	Operating manuals, service manuals, other manuals	<p>Should provide 2 sets(hardcopy and soft-copy) of:-</p> <ul style="list-style-type: none"> User, technical and maintenance manuals to be supplied in English language along with machine diagrams; Service and operation manuals 	

		(original and copy) to be provided; • Advanced maintenance tasks documentation;	
16.	Payment	Payment only after satisfactory performance demonstration	

Micropipettes (*6 No's)

Sno.	Specifications	Requirement	Yes/No
1	Material	Liquid handling equipment, Autoclavable	
2	Capacity /Volume	20-200 micro liter (Variable) 100-1000 micro liter (Variable) 1-10ml (Variable) *2 each	
3	Feature	<ul style="list-style-type: none"> • Single – channel/manual • Volume lock to prevent drifting 	
4	Accessory	Tips, Tip boxes	
5	Calibration	Certificate from NABL accredited lab for 3 points	
6	Warranty	2 years	

Carbon dioxide Incubator

FEATURES	
Capacity	150-200 Litres
Display	LCD/LED (minimum 5")
Processor	microprocessor
Heating type	Air/water/Gel (microcomputer control)
No. of shelves	3-5 minimum
Temp. control range	0 - 80°C
Ambient temp. range	20-40°C
Temp. control accuracy	± 0.1
Temp. uniformity	± 0.3
CO₂ sensor	IR sensor
CO₂ control range	0-20%
CO₂ stability	± 0.1%
CO₂ recovery time	0-10 min
CO₂ tank switch/alarm	Yes
Temp. recovery	5-15 min
O₂ control system	Yes
O₂ Range	0-20%
O₂ accuracy	± 0.2%
O₂ sensor	yes
Humidity	95±5%
Humidity recovery	10-20 min
Alarm	Audio & visual
Stacking	Possible
Cylinders	CO ₂ cylinders (2 nos.); Capacity- 9-10kg; Purity- 98.00%
Communication port	Yes
Power	AC 230V/6A, 50Hz
Power consumption	500-600W (max.); 50-100W at 37°C
Disinfection	Multiple will be preferred
Calibration	Certificate from NABL accredited lab for 3 points
Warranty	5 years with user manual

Frost free Two Door (side by side) Refrigerator

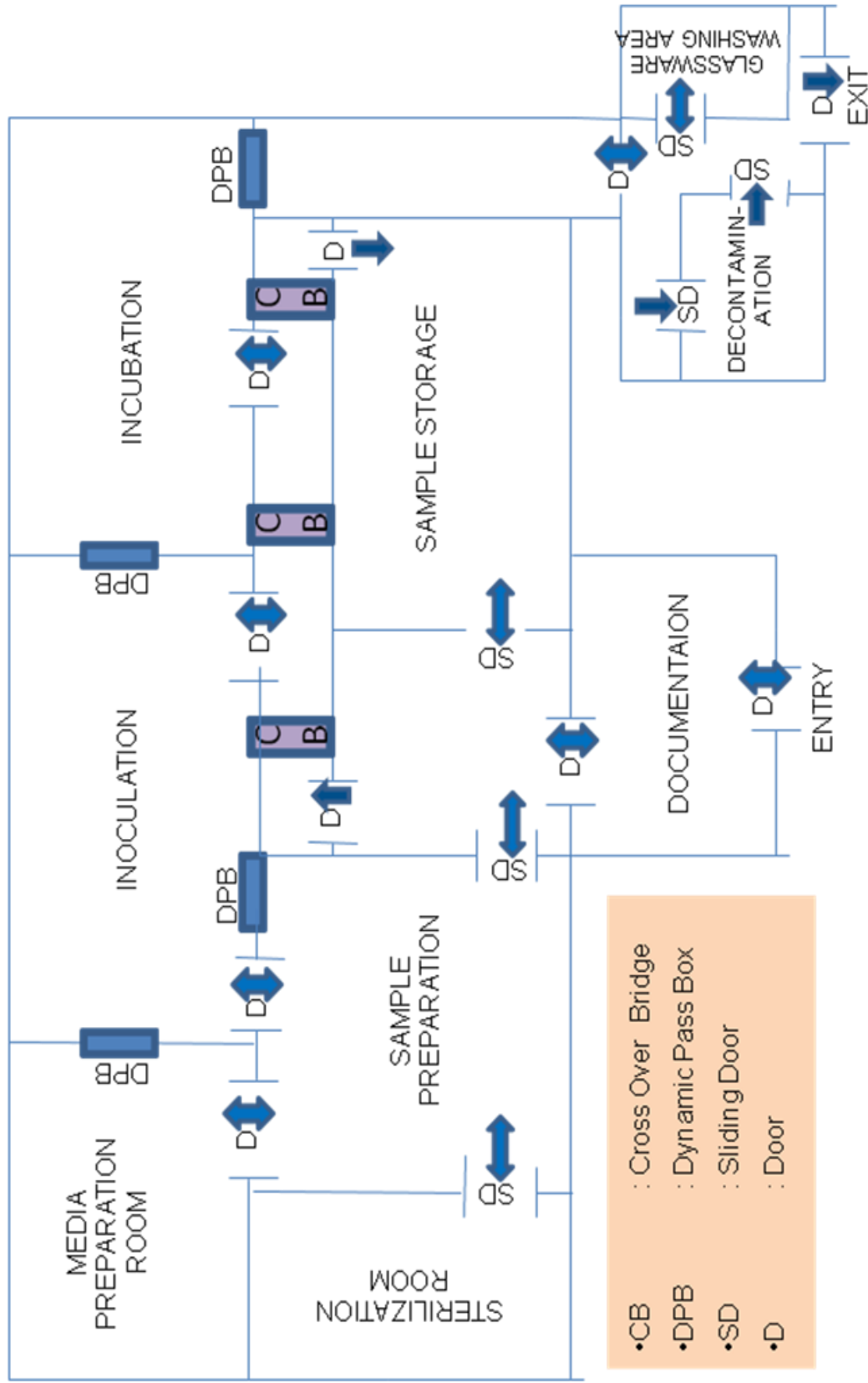
S.No.	Specifications	
	Material Stainless steel	
1	Capacity	Approx. 500 liters and above
2	Adjustable Shelves	Tempered glass shelves 05 No.
3	Temperature Range	Digital display and temperature controls Refrigerator +2° to +8°C Freezer -20 °C
	Audio alarm	Alarm is door is ajar for long
4	Inner body	Rust 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 3years and Life time on motor	

LIST OF MEDIA - MICROBIOLOGY

Sl. No.	MEDIA
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)

Microbiology Lab Indicative Layout



Microbiology Lab should be uni-directional and any cross-contamination should be avoided.