REQUEST FOR BUGETARY ESTIMATE

Ref.: HSCC/SES/Animal House/WB/2023 dated: 17.05.2023

HSCC (India) Ltd. intends to invite on-line bids from eligible bidders, in single stage two bid system for Planning, Design, Construction & Validation of Proposed Animal House on Turnkey Basis for an Institute in West Bengal.

General Technical Specifications, Layout Drawing and BOQ of proposed Animal House works are Annexed at Annexure-I.

It is requested to submit the Budgetary Quotation of the Specialised Works of Animal House and its Equipment in Company Letter Head, as per the BOQ format enclosed at Annexure-I, in both Hard & Soft Copy within 10 days of issue of this Notice at following address:

General Manager (Procurement)
Special Engineering Services Department
HSCC (India) Ltd.,
E-6(A), Sector-1,
Noida (U.P.) - 201301.

Soft copy may please be sent to: ses@hsccltd.co.in

General Manager (Proc),
HSCC (India) Ltd.

TECHNICAL SPECIFICATION OF CONSTRUCTION OF ANIMAL HOUSE AND IT'S EQUIPMENT

TECHNICAL SPECIFICATIONS FOR CONSTRUCTION OF CLEAN ROOM:

1. **Modular Wall Panel:**

   Partition PUF Panels (50mm, 75mm and 100mm thick): The Partitions are to be double skin modular sandwich wall panel made of 0.80mm thick PCGI sheet powder coated on both sides insulated with poly Urethane foam(PUF) by high pressure filling machine with density not less than 40 +2kg / m3 with bottom C- channel to fix panel to ground floor with necessary flashing for pass box or machine cut outs (payment shall be made separately for cut outs at pass box) fixing with necessary Stain steel screws etc, joints fixed with silicon sealant.

2. **Ceiling Panel:** Ceiling PUF panels 50mm thick: The ceiling panels are to be double skin modular sandwich panels made of 0.80mm thick PCGI sheet powder coated on both sides insulated with Poly Urethane Foam (PUF) by high pressure filling machine with density not less than 40+2 kg/M3 with necessary suspension arrangement using galvanized rod which can bear weight not less than 180 + 10kg/ m2 with necessary flashing for supply and return cutouts for electrical fittings (Which will be paid separately for cut out & pass boxes) joints filled with silicon sealant etc.

3. **Coving:** Joints like wall to wall, wall to floor and ceiling to wall shall be provided with covings for easy cleaning. The services like water, steam, compressed air etc. in laboratory and animal areas shall enter through ceiling mounted service pendants. All the joints and penetrations in the building shall be sealed. Wall to wall, wall to ceiling and wall to floor corners shall be provided with approx. 3" coving to prevent accumulation of dust and to enable easy cleaning.

4. **View Panel:** The windows/ view panels shall be internally flushed with the wall. The window / view panel shall be in Powder Coated/Epoxy Painted/SS frame. The windows/view panel shall have double glass panels in 6 mm toughened glass hermitically sealed. The window frame and glass panels shall be sealed to prevent ingress of air inside the laboratory due to the negative pressure. Size 350mm x 750mm of 6mm.

5. **Epoxy Flooring:** The flooring on which the epoxy flooring to be laid, to be cleaned by mechanically or /manually properly. The primer 1mm to be supplied. Any cracks are to be filled properly. Finally applying the top coat of 2mm thick evenly to the required shade SLC /Screed total 5 mm.

TECHNICAL SPECIFICATIONS FOR CLEAN ROOM EQUIPMENT:

GENERAL:
The clean room equipment shall be of high-end technology with robust latest design and of global quality standards, suitable for reliable and efficient performance, needing low maintenance with minimum power consumption.

1. **Pass Box** with UV lamp and interlocking door MOC –SS304: Pass Box (Dynamic / Static type) shall be provided at strategic / required locations for transfer of samples, chemicals and materials to and from the laboratories. The dynamic pass box shall provide clean environs of desired level as required.

   Note: The pass box is used for the transfer of materials in between two Cleanrooms of different cleanliness class or between Cleanroom and non-Cleanroom. Door interlocking function is a part of the system which maintains the condition that one door only can be opened at time. Pass boxes shall be of Dynamic type with inbuilt HEPA filter and UV Light.

2. **Air Curtain**: Supply, installation, testing & commissioning of Air curtains, Horizontal air intake centrifugal type with air velocity 18 m/s with regulation facility for high and low speed suitable for 280 x 275 mm (Height x Depth dimensions) 230-V AC supply complete as per technical specifications & as required.

3. **Autoclaves:** The autoclaves shall be provided for decontamination purpose and shall be of double door type of suitable capacity as required. The autoclave for sterilization purpose shall be double door type of required capacities depending upon the requirement. The autoclave control system shall be PLC controlled, programmable and shall allow pre-programmed cycles. The logic of pre-programmed cycles shall be developed as per the protocols. The autoclaves shall be with in-built steam generators of required capacities such that the required steam pressure inside the chamber during sterilization/decontamination c y c l e is attained in not more than 30 minutes time.

4. **Automatic Cage & Bottle Washing Machine :**

   - The washer could able to wash Cages, Lids, Water bottles and Caps.
   - The same machine can wash Rodent Cages and Plastic cages.
   - The Approximate installed dimension should be Width: 2000mm Length: 1000mm Height: 2200mm.
   - Approximately 25 to 30 Mice cages have to be wash in a single cycle.
   - Approximately 70 water bottles have to be wash in a single cycle.
   - Cycle duration should not longer than 5mins.
   - It should be single door configuration.
   - It should come with 2 loading shelves
   - Each wash cycle shall be able to be programmed for but not limited to detergent wash, drip, rinse, and vapor exhaust treatment.

- Detergent Wash perform with hot water and detergent with minimal concentration, Temperature: Not less than 55°C
- Dripping has to be there to Pauses before next phase to allow detergent water to drain back to wash tank
- Rinse phase has to perform with non-re circulated clean, hot water, in dedicated rinse tank with Temperature: Not less than 82°C
- The instruments should incorporated with Vented vapor removal system to : remove vapor saturated air from chamber
- Declared cycle times need to achieve a validated washing cycle from a microbiological point of view. Certificate released by third party laboratory has to incorporate be provided as proof.
- An oscillating manifold with separate wash and rinse nozzles to prevent any risk of cross contamination.
- Spray nozzles shall be positioned to reach all cages and bottle surfaces
- Wash cycle should be selectable and started from control system's operator interface panel.
- It should come with recirculating water system equipped with filtration system.
- Separate wash and rinse tank equipped with level control, automatic fill, overflow safety and temperature control.
- Wash water tanks should come with bottom slope to outlet. All tanks to be insulated and sealed.
- The Machine supplied with Wash Pump, Rinse Pump, Peristaltic Detergent Pump and exhaust Fan.
- The Water filter Mesh screen with flat design. Removable without tools. Accessible without the need to remove trays or shelves from the chamber
- Stainless mesh with perforation smaller than jet-spray orifice, maximum1mm mesh size.
- Base & Sump, Spray header & jets, Processing pipes, Internal piping, Drain piping all should be made of Type 304 stainless steel material
- Door panel should be sliding up to save the space and visible by tempered glass.
- Process valves, pump housing & impeller must be made of type 316 stainless steel.
- Doors to provide air tight application, full vision inside the chamber, and reduced noise and heat transmission when the machine is running.
- Door static compression gaskets should be there to provide water and air - tightness.
- During a standard cycle the maximum temperature measured on the external glass cannot exceed 41°C.
- Chamber Wall should be made up of Stainless-steel construction with reinforcement and insulation.
- The wall assembly should ensure a watertight chamber.
- Mechanical system including tanks, pump s and service connection valves shall be confined to an enclosed area on the side and bottom of chamber.
- Exterior Enclosure should be a Stainless steel and and/or suitable ABS plastic panel.
- Provide access panels for equipment servicing where required.
- There will be a Storage area built into technical compartment inside machine max footprint for storage of chemical tanks or drums.

- Electrical panel fully accessible from the front of the unit. Microprocessor, PLC controller and electronic components shall be housed in insulated control boxes. Control box is UL and CE compliant.
- The system provided with Standard, commercially available PLC control,7" touchscreen interface, Standard USB Port with IP protection at main control panel
- Information display on control panel should includes Stored Cycle name for operator selection, Pre-programmed cycle parameter data, Real time in -process cycle performance data, Utilities consumptions (electrical, water and detergents)
- The System features should be:
    a. Controls washer function, monitors washer operation and alerts operator of alarm conditions as it occurs or on demand.
    b. Indicate alarm conditions in visual mode.
    c. Cycle phase time, temperature, alarms and other key operations settings.
    d. Allow operating personnel to select from menu of pre -programmed cycle parameters.
    e. Allow supervisor with pass code to modify pre -programmed cycle parameters.
    f. Stores record of each cycle's operating characteristics in the control system and available for download via USB communication port.
    g. Cycle Program Memory minimum up to 5 factory installed programs and custom named programs.
    h. Possibly advance technology like access via Smartphone or Tablet app, view data, pass messages, and allow Supervisor access to setting and adjustment of cycle parameters.
    i. Self-start feature weekly programmable
    j. Self-cleaning feature to drain unit and flush chamber and lines
    k. Remote service feature to allow remote troubleshooting and/or software upgrade via internet connection

- As the part of safety the unit comes with the features that requires door to be completely closed to start or continue operation. Requires door locking system. Stops operation if door is opened during cycle.
- External emergency push buttons should be there near to the door to stop operation. Emergency Signage has to provide as per the guidelines.
- Machine should delivered with Service & Operating Manual, Wiring and pneumatic diagrams and P&ID diagrams.
- Bedding disposal station intended for the protection of the environment and operator against exposure to allergens and airborne contaminants generated during bedding disposal operation. : 01 No.

Performance and Protection

- Approximate useful Dimensions (W x D x H) 1000 x 580 x 600 mm.
- External dimensions approximately (W x D x H) 1250 x 900 x 2000 mm.
- HEPA filter of class H14 (which ensures a performance according to EN 1822). The HEPA filter m u s t be DOP tested.

- Two levels of pre -filtrations: two “G4” pre filters and one “F7” rigid bag filter (according to EN 779) housed behind the stainless steel swing panel to prolong HEPA filter life.
- Exterior of cabinet must be epoxy painted stainless steel while the internal working chamber completely built in AISI 304L stainless steel with an accessible workplace open on the front side.
- Work top made of AISI 304L with sliding reduction funnel to increase or reduce the reduction funnel opening in order to simplify waste bag removal under constant protection
- The Environment air should be drawn in the front access opening of the machine at an average speed ≥ 0.55 m/s thus creating a uniform barrier that protects both the operator and the environment from airborne allergens and contaminants contained within the working area.
- Eye – level touch pad membrane control panel should be designed to keep the automatic regulation system of the blower and to trigger an alarm whenever safety air barrier conditions are no longer guaranteed and whenever the filter working hours have expired

Clean ability:

- the protective net or equivalent that should avoid bedding and dust particles to clog the exhaust pre-filter, preserving the lifespan and the efficiency of the HEPA filters.
- The access to pre-filter housing should be made easier thanks to a swing panel with “screws-free” locking system for guarantee an higher clean ability and for changing the pre -filters from within the unit whilst protected by the flow. All the corners should be properly rounded to enhance the clean ability

Tests: A Test Report comes along with the bedding disposal station with the following parameters to be tested:

- Air velocity test
- Sound test
- Electrical test
- DOP test
- Alarm test
- Functional Test

Accessories:

- Polyethylene bin with stainless steel trolley with a larger base to guarantee more stability
- Stainless steel waste bag trolley with hinged opening to remove the bag filter from the front, with a larger base to guarantee more stability

5. **Dunk Tank :** Dunk tank/s shall be provided at strategic / required locations for transfer of samples, che mica ls a nd materials to and from the laboratories. The dunk tanks shall be filled with approved chemicals like NaOH, Sodium Hypo- Chloride Solution etc. during active use. Provision for drain & change of chemical may be kept.

6. **Biological Safety Cabinet:** The Biosafety Cabinets shall be Class II B2 type and shall be as per NSF 49 standards. The Bio-Safety Cabinet body, frame and supports shall be

constructed in 18swg SS 316L. The work surface shall be in perforated 18swg SS 316 L. The front panel shall be in 18swg SS 316 L top section and sliding sash in toughened glass with required counter weight.

The Bio-Safety Cabinet shall be complete with following accessories, features and specifications:

- Approx. Work Space of 1000 mm (W) x 610 mm(D) x 610 mm (H)
- Supply Air Face velocity not to exceed 0.65 m/sec
- Working chamber to operate under > 10 mm pressure
- Drain receiptable with drain faucet
- Fluorescent light & UV light
- Extract plenum and Air control dampers
- 2 Nos. Power outlet switch/sockets
- 80 to 100 fpm air inlet velocity at 8 -10 inches of sash opening
- Supply and Exhaust HEPA filters shall be mini pleat separator less type with 99.97 % efficiency down to 0.3 micron particle size
- Supply and Exhaust Blowers with motor, statically and dynamically balanced.
- Magnehelic differential pressure gauge for chamber and HEPA filters
- Control console with indication lamps
- Exhaust system dedicated type.

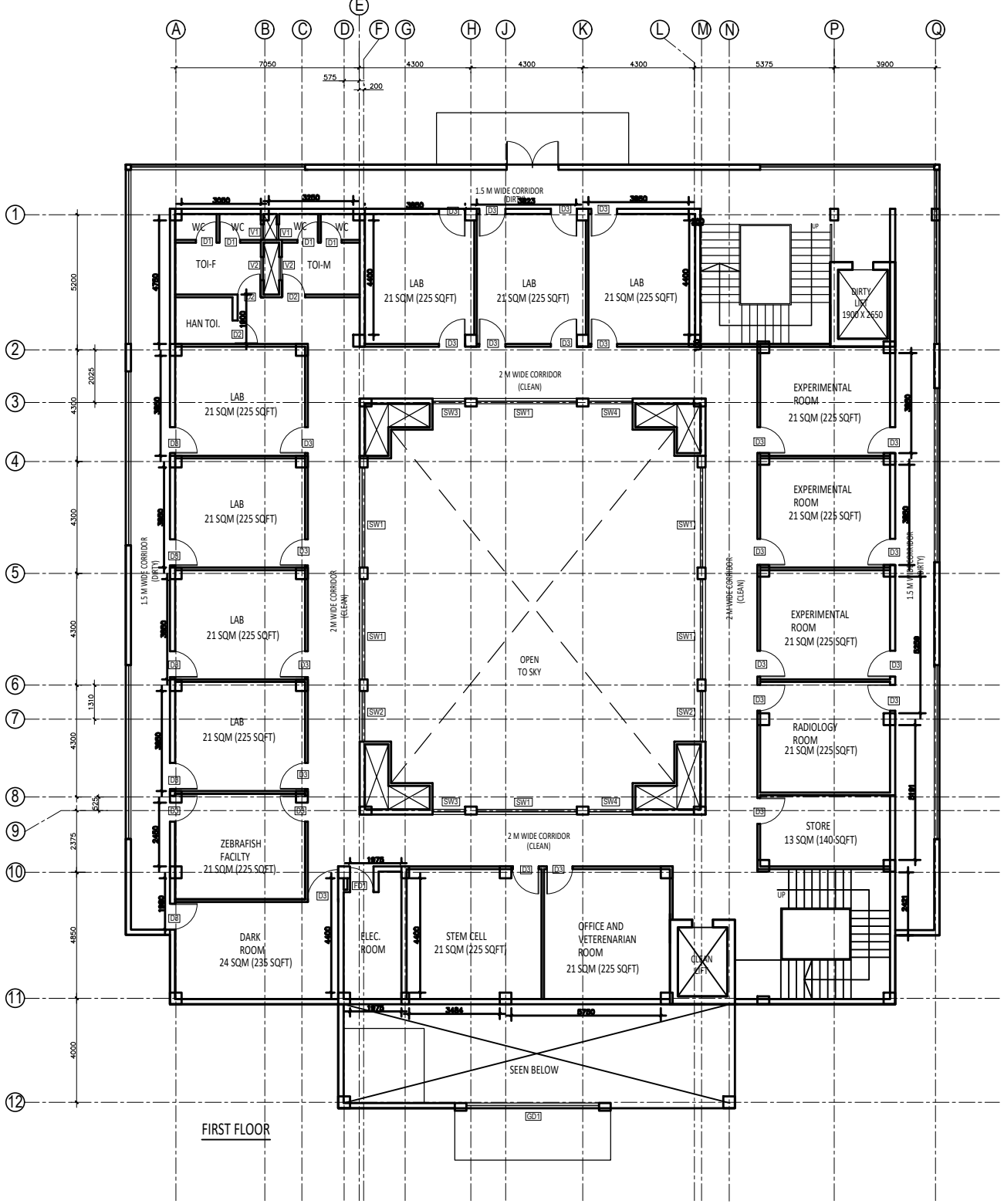
7. **Garment Cubicle:** Garment Cubicle is suitable for storage of clean apparel for Cleanrooms having HEPA filter.
    - HEPA Filter with 99.99% efficiency down to 0.3 microns.
    - UV Germicidal tube.
    - Body Structure SS 304 with No.: 4 Finish
    - Switch for UV light and Florescent On/Off.
    - Hour meter for UV is provided.
    - Doors are provided with double glazed view panel.
    - Hanger rod with hangers and shoe rack provided.

8. **Cross Over Bench:**
    - Cross over bench is used to store shoes and take support to change your Cleanroom dress.
    - MOC: SS 304 No: 4 finish.
    - Easy to store shoes and slippers in the individual rack.
    - Easy to clean.

9. **Animal Bedding material disposal Hood Specifications:**
    - Model: Hood with Max visibility & Clean ability
    - Suitability: To use for Animal/Mice/Rat & Rabbit cages bedding material Disposal with Protection for Allergens and Containments
    - Type: 0.3-micron 99.99% HEPA filter exhaust with Good quality Pre-filtration, Carbon filter for Oder removal And working Access with Air Barrier
    - Operating Voltage: 230 Volts ~ 50 Hz
    - Working Area: Approximate W 1020mm x D 680mm x H 600mm with UV light and Heavy-duty casters/Wheels

- Indicators: Air flow indicator with Low Air-flow alarm
- Inner chamber: Corrosion resistant Stainless steel
- Outer/External chamber: Heavy duty Powder quote d G I she e t
- Waste / Disposal capacity: Container/Bag Volume 60 to 100 Lt. with Trolley

10. **UPS** console shall be provided to cater to the extreme essential power requirement of the laboratory. All critical components like Door Interlocks, BMS, Operation of Isolation Valves, exhaust blowers of Animal Rooms and critical equipment shall be provided with Uninterrupted Power Supply.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4850
4000
1.5 M WIDE CORRIDOR (DIRTY)
WC
TOI-F
TOI-M
HAN TOI.
LAB
21 SQM (225 SQFT)
2 M WIDE CORRIDOR (CLEAN)
DIRTY LIFT 1900 X 2650
EXPERIMENTAL ROOM
21 SQM (225 SQFT)
OPEN TO SKY
RADIOLOGY ROOM
21 SQM (225 SQFT)
STORE
13 SQM (140 SQFT)
ZEBRAFISH FACILTY
21 SQM (225 SQFT)
DARK ROOM
24 SQM (235 SQFT)
ELEC. ROOM
STEM CELL
21 SQM (225 SQFT)
OFFICE AND VETERENARIAN ROOM
21 SQM (225 SQFT)
CLEAN LIFT
UP
SEEN BELOW
FIRST FLOOR

Construction of Proposed Animal House in West Bengal

The Budgetary Quotation should be inclusive of all charges like packing, forwarding, supply, installation, commissoning & validation including 18% GST etc.

Sr. No.	Description of item	Unit	Qty	Unit Rate in Rs.	Amount in Rs.
1	**MODULAR WALL PANEL :** Supply & installation of double skin modular wall panels made of 0.8mm thick GPSP (galvanized plainskin pass) sheet powder coating with min. 60 Micron on both sides with PUF of density 40±2kg/m3 as infill, as per approved specification; complete as per technical specifications and as required.				
1.1	100 mm Thick Wall Panel	Sqm	1,121.35		-
1.2	50 mm Thick Wall Panel for Cladding	Sqm	137.60		-
1.3	Risers in 100 mm Panels	Sqm	100.00		-
2	**CEILING PANEL:** Supply & installation of double skin totally flush walkable false ceiling made of 0.8mm thick GPSP (galvanized plain skin pass) sheet powder coating with min 60 micron on both sides with PUF of density 40 ± 2 kg/m3 as in fill; complete as per technical specifications and as required.				-
2.1	50 mm thick Ceiling panels	Sqm	300.34		-
3	**COVING**				-
3.1	Extruded aluminium powder coated minimum 60 micron, clip on type covings for the entire **wall to wall and wall to ceiling joints**. including all material, complete as per technical specifications and as required.	RM	762.36		-
3.2	3D Internal/External corner coves. including all material. complete as per the approved specification.	RM	20.00		-
3.3	90 deg. Corner cove of Al. powder coated for 50MM panel joints	RM	20.00		-
3.4	Factory made cutouts for HVAC and Electrical terminals	RM	20.00		-

Construction of Proposed Animal House in West Bengal

The Budgetary Quotation should be inclusive of all charges like packing, forwarding, supply, installation, commissoning & validation including 18% GST etc.

Sr. No.	Description of item	Unit	Qty	Unit Rate in Rs.	Amount in Rs.
4	**VIEW PANELS:** Double glazed view panels made of 6mm thick Float glass in wall panels, Double adhesive tape and silicon sealant including all material, lead lift T&P, Labour etc. complete as per the direction of Enqineer incharqe; complete as per technical specifications and as required.	Nos	16.00		-
5	**EPOXY FLOORING:** Surface preparation by cleaning and followed by supply and laying of primer and based mortar and Epoxy based putty coat followed by 2 coats of PU Finish Coat, including all material; complete as per technical specifications and as required.		433.54		-
	Total Estimated Cost in Rs.				-

Equipment for Construction of Proposed Animal House in West Bengal

The Budgetary Quotation should be inclusive of all charges like packing, forwarding, supply, installation, commissoning & validation including 18% GST etc.

Sr. No.	Description of item	Unit	Qty	Unit Rate in Rs.	Amount in Rs.
1	**PASS BOX:** Supply, installation, testing and commissioning of Static/Dynamic Pass box wall/floor mounting with inclination at a height of 4 feet from FFL, for controlling ingress of particulate contamination into clean room and controlled environments to maintain the integrity of prpducts and process, made of industrial grade elctro-galvanized seel with base surface constructed of stainless steel and with suitable acrylic doors to provide a clear view of the internal chamber with following specifications confirming to relevant Indian/ international standards for CLeanroom facilities etc, complete as per approved specification and GA drawing, complete as per technical specifications & as required.				
1.1	Static Pass box of nominal size 915 mm x 915 mm x 1250 mm	Set	1		-
1.2	Dynamic Pass box of nominal size 610 mm x 610 mm x 1250 mm	Set	1		-
2	**AIR CURTAIN :** Supply, installation, testing & commissioning of Air curtains, Horizontal air intake centrifugal type with air velocity 18 m/s with regulation facility for high and low speed suitable for 280 x 275 mm (Height x Depth dimensions) 230-V AC supply complete as per technical specifications & as required.	Nos	1		-
3	**AUTOCLAVE:** Supply, installation, testing and commissioning of double door, semi automatiic Horizontal High pressure, High vacuum Steam Sterilizer autoclave of following inner chamber sizes as per specifications., complete as per technical specifications & as required.				-

Equipment for Construction of Proposed Animal House in West Bengal

The Budgetary Quotation should be inclusive of all charges like packing, forwarding, supply, installation, commissoning & validation including 18% GST etc.

Sr. No.	Description of item	Unit	Qty	Unit Rate in Rs.	Amount in Rs.
3.1	a) 3 ft (W) x 3 ft (H) x 5 ft (D)	Set	1		-
3.2	a) 3 ft (W) x 3 ft (H) x 4 ft (D)	Set	1		-
4	Supply, installation, testing and commissioning of **automatic cage and bottle washing machine** of dimensions 2020 x 850 x 2050 mm with On board Exhaust fan, Electrically heated unit kit Electrically driven unit upgrade (Valves and arms movement) and Validation protocol document (IQ, SAT, OQ,PQ) etc., complete as required as per specifications - Size : 2020 x 850 x 2050 mm; complete as per technical specifications & as required.	Nos	1		-
5	**DUNK TANK :** Supply, installation of Dunk tank as per approved GA drawings and specification; complete as per technical specifications & as required.	Nos	1		-
6	**Bio Safety Cabinets** - Work Space of 1000 mm (W) x 610 mm(D) x 610 mm (H), Class II; complete as per technical specifications & as required.	Nos	2		-
7	**CROSS OVER BENCH - STAINLESS STEEL**: Supply and installation of Cross Over Bench, made out of Stainless Steel sheet of 1.2mm thickness (SS grade- 304) with 04 Grade Finish and duly reinforced with SS tubalar frames as per design; complete as per technical specifications & as required.	Nos	3		-
8	**GARMENT CUBICLE**: Supply and installation of Garment Cibicle with necessary accessories as per approved GA drawing & specification; complete as per technical specifications & as required.	Nos	3		-

Equipment for Construction of Proposed Animal House in West Bengal

The Budgetary Quotation should be inclusive of all charges like packing, forwarding, supply, installation, commissoning & validation including 18% GST etc.

Sr. No.	Description of item	Unit	Qty	Unit Rate in Rs.	Amount in Rs.
9	**Animal Bedding material disposal hood**; complete as per technical specifications & as required.	Nos	1		-
10	**UPS:** Supply, installation,testing and commissioning of 3 Phase IN 3 Phase OUT with AC input voltage:415 V +/- 10% ,frequency:50 Hz +/- 5%, output voltage: 415V +/- 2% ,Output Frequency:50Hz +/- 0.5%,Efficiency:0.9 Type of battery: SMF, Battery capacity:For a backup time of as specified,Battery Charging Current: Shall be calculate for unity power factor. Protection:Electronic over voltage trip, Electronic under voltage trip,Single Phase prevention, Overload , Short Circuit and Bttery overcharge,Indications:AC On,Inverter on Charger Fuse,inverter trip. One number RS232 ports to steady the data with all accessories complete etc., complete as per technical specifications & as required.				-
10.1	60KVA ONLINE UPS 3-PHASE I/P and 3-PHASE O/P with 30Min. Backup including accessories(Provision for further synchronisation to be considered)	Nos	1		-
10.2	160A MCCB with Enclosure for UPS Input and Output	Nos	2		-
	Total Estimated Cost in Rs.				-