INSTITUTE OF NANO SCIENCE AND TECHNOLOGY, MOHALI
(An autonomous Research Institute of Department of Science and Technology, Government of India)
Habitat Centre, Sec-64, Phase X, Mohali – 160062, PUNJAB
Phone No: 0172 – 2210075/74/73, Fax No: 0172 – 2211074
Website: www.inst.ac.in

INSTITUTE OF NANO SCIENCE AND TECHNOLOGY (INST), MOHALI.
Habitat Centre, Phase 10, Sector 64, SAS Nagar, Mohali – 160062 PHONE: 0172 – 2210075/74/53

REF. NO. INST/12(3)/2020-PUR

TENDER FOR 10000 CLASS CLEANROOM WITH AIR SHOWER, SCRUBBER, GASLINES AND FUME HOOD AT INST, MAIN CAMPUS, SECTOR – 81, KNOWLEDGE CITY, MOHALI.

SIGNATURE & SEAL OF TENDERER

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Habitat Centre, Phase 10, Sector 64, SAS Nagar, Mohali – 160062 PHONE: 0172 – 2210075/74/53

TENDER NOTICE

Bid reference : REF. NO. INST/12(3)/2020-PUR

Name of work : Supply, installation and commissioning of 10000 Class Cleanroom with Air Shower, Scrubber, Gaslines and Fume Hood at INST Main Campus Lab, Located at Knowledge City, Sector 81, Mohali.

Estimated value : Rs. 64,00,000/-

EMD : Rs. 1,60,000/-

Tender Fee : Rs. 590/-

Tender download : From www.inst.ac.in or CPPP Website: www.eprocure.gov.in

IMPORTANT DATES AND TIME	
Date and Time of Pre-bid Meeting	15th June, 2020 (1400 HRS) **(Quires entertain only through email)**
Last Date & Time For Submission	15th July, 2020 (1400 HRS)
Date / Time of Opening of Bids	15th July, 2020 (1500 HRS)
Venue of Bid Opening at INST	INST, Habitat Centre, Phase 10, SAS Nagar, Sector 64, Mohali
Tenders to be submitted at	INST, Habitat Centre, Phase 10, SAS Nagar, Sector 64, Mohali

Pre-Bid Meeting (PBM)

- The objective of PBM is to provide a platform for clarifying issues and clearing doubts, if any, about the specifications and other allied technical/commercial details of the bid document. Bidders are requested to submit their bids only after the PBM so as to take care of the changes made in the bidding document, if any.
- The prospective participants should inform their intention to participate and send written queries at the email: purchase@inst.ac.in positively up to 10th June, 2020 to enable us to keep the response ready. Queries after 10th June, 2020 upto 4.00PM will not be entertained.
- Pre-bid quires will be entertained only through email due to COVID-19 we are unable to conduct meeting at INST Mohali.
- Change in the technical specifications and terms & conditions if any, for the above item after pre-bid deliberations, will be uploaded on the INST website & CPPP Website. All vendors are requested to quote accordingly.

Head of Office

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Habitat Centre, Phase 10, Sector 64, SAS Nagar, Mohali – 160062 PHONE: 0172 – 2210075/74/53

TENDER NOTICE

Director, Institute of Nano Science and Technology, Mohali invites tenders for supply, installation and commissioning of 10000 Class Cleanroom with Air Shower, Scrubber, Gaslines and Fume Hood at its main campus located at sector 81, Knowledge city, Sector – 81, Mohali.

1. The bid shall be submitted in two cover system consisting price bid. The price bid of those who qualify in the technical bid only will be opened.
2. Detailed terms and conditions, scope of work etc. as indicated in the invitation to bid are contained in the bidding document of the above work.

Time of completion	:	90 days
Address for communication and place of bid opening	:	INST, Habitat Centre, Phase 10, SAS Nagar, Sector 64, Mohali - 160062.
Bid Validity	:	180 days

All bids must be accompanied by Bid security (EMD) and tender fee as specified in the tender notice.

Head of Office

Place: Mohali Date: 26/05/2020.

SIGNATURE & SEAL OF TENDERER

INSTITUTE OF NANO SCIENCE AND TECHNOLOGY, MOHALI

(An autonomous Research Institute of Department of Science and Technology, Government of India)

Habitat Centre, Sec-64, Phase X, Mohali – 160062, PUNJAB

Phone No: 0172 – 2210073/74/75, Fax No: 0172 – 2210074

Website: www.inst.ac.in

General Tender Terms & Conditions for tender

This tender is Opened tender and published on INST Website: www.inst.ac.in and CPPP Website: www.eprocure.gov.in and also published in national newspapers for Supply, installation and commissioning of 10000 Class Cleanroom with Air Shower, Scrubber, Gaslines and Fume Hood at INST Main Campus Lab, Located at Knowledge City, Sector 81, Mohali. The tender is invited in two cover system from the registered and eligible firms in sealed tenders form. Prospective bidders willing to participate in this tender shall submit personally or send their sealed bid through speed post / registered post / courier to INST at Habitat Centre, Phase 10, Sector 64, SAS Nagar, Mohali – 160062, Phone: 0172 – 2210075/74/53.

1. **Due date**: The tender has to be submitted before the due date. The offers received after the due date and time will not be considered.

2. **Preparation Bids**: The offer/bid should be submitted in two bid systems (i.e.) Technical bid and financial bid. The technical bid should consist of all technical details along with commercial terms and conditions. Financial bid should indicate item wise price for the items mentioned in the technical bid. The Technical bid and the financial bid should be put in separate covers and sealed. Both the sealed covers should be put into a bigger cover along with letter of EMD and to be sealed. The tender number and details should be superscripted on the left side of the outer cover. The Quotations should be valid for 120 days from the date of opening of tender. The Quotations duly sealed and super scribed on the envelope with the reference No. and due date, should be addressed to "**The Director, Institute of Nano Science and Technology, Habitat Centre, Sector 64, Phase –X, Mohali, 160062, Punjab, India**" so as to reach on or before the due date.

3. **Delivery of the tender**: The tender shall be sent to the below mentioned addressee either by post or by courier so as to reach our office before the due date specified in our Schedule. The offer/bid can also be dropped in the tender box on or before the due date specified in the schedule. The tender box is kept in Foyer area of INST.

4. **Tender Preparation Expenses:** The tenderer shall solely bear all the costs associated with the preparation and submission of the bid. The Institute shall in no case be responsible or liable for such costs, regardless of the conduct or outcome of the tender process. In no case, such costs shall be reimbursed by the Institute.

5. **Opening of the tender**: The offer/bid will be opened by a committee duly constituted for this purpose. The technical bid will be opened first and it will be examined by a technical committee which will decide the suitability as per our specification and requirement. The financial offer/bid will be opened only for the offer/bid which technically meets all our requirements as per the specification. The bidders if interested may participate on the tender opening Date and Time. The bidder should produce authorization letter from their company to participate in the tender opening. Only one representative will be allowed to participate in the tender opening.

6. **Opening of Financial Bids:** Bids of the technically qualified bidder's shall only be considered for opening and evaluation of the financial bid on the date and time mentioned in critical date's section.

7. **Acceptance/Rejection of bids:** The Committee reserves the right to reject any or all offers without assigning any reason.

8. **Tender Fee/EMD**: Tender fee/EMD is to be obtained from the bidders except those who are registered with the Central Purchase Organisation, National Small Industries Corporation (NSIC) or the concerned Ministry or Department. The tenderer should submit Tender Fee/EMD amount as per tender ref. no. through NEFT/RTGS in INST Account. Account Details are as follows: **a.** Name of Beneficiary: Institute of Nano Science and Technology (INST)
   b. Account No. **2452201001102**
   c. Name of Bank: **Canara Bank, Sector 34, Chandigarh**
   d. IFS Code: **CNRB0002452**
   e. MICR Code:**160015003**
   f. Swift Code: **CNRBINBBFFC**

   The details of transaction for Tender Fee/EMD viz. Name of bidder firm, Tender Description, Transaction ID/No. of Transfer, Transaction date, Amount of Transaction, Name of Bank, Address of Bank shall be furnished by the tenderer on their letterhead separately along with their tender.

9. **Refund of EMD**: The EMD will be returned to unsuccessful Tenderer only after the Tenders are finalized. In case of successful Tenderer, it will be retained till the successful and complete installation of the equipment.

SIGNATURE & SEAL OF TENDERER

GENERAL TERMS & CONDITIONS (INSTRUCTION TO BIDDERS)

Tender for the supply, installation and commissioning of Clean Room at INST Main Campus Lab, Located at Knowledge City, Sector 81, Mohali subject to the following terms and conditions.

1. Eligibility and qualification requirements.

1.1 To be eligible for the award of Contact, bidders shall provide satisfactory evidence to the INST regarding their eligibility, capacity and adequacy of resources to carry out the Contract effectively. To this end, all bids submitted shall include the following information.

   a. Copies of original document defining the constitution or legal status, place of registration and principal place of business of the company or firm or partnership or if a joint venture, of each party there to constituting the bidder.
   b. Details of the experience and past performance of the bidder (or of each party to a joint venture) on works of similar nature within the last three years, and details of current work in hand and other Contractual commitments shall be submitted as per Annexure II Schedule 1 and Schedule II of this bidding document.

1.2 For the purpose of this particular contract, bidder should meet the following qualifying criteria as minimum

a. The bidder should be in business for a minimum period of 3 years at the time of bid opening in the same name and style.
b. The bidder should have completed a minimum of 2 similar work of the estimated value of the Contract, for which this Invitation to Bid is issued, during the last three years
   Or
   Four similar work for 50% of contact value or above during the last three years in govt. organisations.
c. At least 2 Nos of Successful Installation list shall be provided.
d. **The bidder shall furnish a copy of the Income tax Returns for the previous year in original or certified true copies.**

2. Scope of work. Supply, installation and commissioning of 10000 Class Cleanroom with Air Shower, Scrubber, Gaslines and Fume Hood as per specification attached.

3. Schedule of Quantities and rates

i. The specification for each item of work and schedule of quantities are given in the enclosed Annexures.

ii. The rate quoted shall be inclusive of all applicable taxes and duties, ESI Contribution, material cost, labour cost, transportation of materials to site, loading and unloading charges and nothing extra will be paid on any account iii. While quoting the rates, the bidder should quote the rates for supply (material cost)
and erection (labour cost) separately in the offer.

4. Tender Fee & Earnest Money Deposit

The tender fee and EMD will be Rs. 590/- (Rs. Five Hundred Ninety Only) and Rs. 1,60,000/- (Rupees One Lakh Sixty Thousand Only) respectively and the same shall be accepted through online NEFT transaction through the site www.inst.ac.in.

5. The EMD of the successful bidder will be released after signing of the agreement and submission of performance security.
6. EMD will be returned through online NEFT/RTGS transaction only.
7. No interest will be paid for the EMD for the period for which it lies with the INST.

8. Period of Validity

The offers submitted by the bidder shall remain valid for acceptance for a period of 180 days from the date of opening.

9. Period of Completion

All the works specified in the scope of work should be completed in all respects within 90 days from the date of receipt of order. However, the tenderer after examining the scope of work and site conditions can specify in the offer, the shortest period by which he can complete the above works in all respects.

10. Award of Work

The successful bidder will be awarded work order for completion of supply, installation and commissioning of 10000 Class Cleanroom with Air Shower, Scrubber, Gaslines and Fume Hood as per tender specs.

11. Performance Security

Within 7 days of the receipt of the work order the successful bidder shall furnish a performance security 10% of the contract value. The performance security in the form of Demand Draft or Bank Guarantee in favour of Director, INST Mohali. The Bank guarantee shall be valid for the entire period of contract including guarantee period plus 60 days.

12. Submission of bills

i) Bills shall be prepared in duplicate in the name of Director INST, Mohali and shall be submitted to the Office of HOO at INST, Mohali for releasing the payment.

ii) Payment shall be released against supply/erection on submission of bills. However, the value of each bill shall not be less than Rs.2, 00,000/- (Two Lakh only).

iii) After completion of the above work in all respects, the Contractor should submit the final bill along with the details for all the works.

iv) While setting the bills, statutory deductions such as income Tax, sales tax on works contract, and ESI, etc. will be deducted from the payment due to the contractor.

13. Payment Terms

a. Supply components

- 80% payment against safe receipt of the goods at site.
- 20% payment on completion of erection, testing and commissioning of the item

- b. Erection components
- 80% payment on erection of the equipment on group basis.
- 20% payment on completion of erection, testing and commissioning of the item

- **14. Guarantee**

The entire work executed should be guaranteed for a period of one year from the date of completion of the work for quality and workmanship. In case any work or part thereof, is found defective due to substandard material, bad workmanship, the same shall be repaired/replaced by the contractor without any extra cost during the guarantee period and the entire expenditure towards such repair/replacement shall be borne by the contractor.

15 . Liquidated Damages

In case the work is not completed within the stipulated period of completion, liquidated damage will be levied @ 0.5% per week for the value of the portion of work so delayed subject to a maximum of 10% of the work order value. However, if the works are delayed due to genuine reasons beyond the control of the contractor due consideration will be given while operating the liquidated damages clause provided the contractor furnishes the documentary evidence for the same and the same is found to be acceptable.

16. General

- The work should be carried out in consultation with the Clean Room Coordinator or the authorized representative of the INST and should be strictly as per the

specification, approved drawings and directions.

- The undersigned reserves the right to accept or reject any or all quotations without assigning any reason whatsoever and no explanation can be sought on this account.

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TECHNICAL SPECIFICATION FOR 10000 CLASS CLEANROOM WITH AIR SHOWER, SCRUBBER, GASLINES AND FUME HOOD

CLASS 10000 CLEAN ROOM FACILITY

Class 10000 Clean Room Facility shall comply clean room requirements including negative/ positive pressure, HVAC system and air compressor, supply and exhaust HEPA filter system, PUF/ Sandwiched specialized partitions, PUF sandwiched walk-able ceiling, epoxy joint less floors with radius coving round corners.

The bidder shall be responsible to construct Class 10000 Facility in line with design lay out enclosed, its fabrication and technical support at site, supervision of other construction, air balancing, testing and commissioning.

Technical and operation documentation should be provided by the bidder and the bidder will be responsible for performance tests for the room by demonstrating –

i) Wall panels check according to the clean air specifications
ii) HEPA filter leak test according to the US Federal Standard 209E.
iii) Room differential pressure test verification,
iv) Particle test for cleanliness, according to US Federation 209E;
v) Air pattern smoke test.
vi) Air velocity test;

TECHNICAL SPECIFICATIONS:

Heating, Ventilation and Air Conditioning (HVAC) system

i. Combined type air handling unit (Tonnage according to lab design) with temperature control from **24- 26oC** and relative humidity value control from **50%~55**
ii. Independent supply & exhaust blower
iii. Unidirectional inward air flow with 80%-90% recirculation and 10%-20 % exhaust

Heaters:

The AHU shall be having strip/tubular heaters of suitable capacity to control the clean room temperature in the specified limits in winters.
The heaters shall be complete with suitable extruded aluminum frame, insulating supports etc.
Thermostat in hot redundant arrangement will be provided at the outlet of the heater section for safety of the heaters.

Supply & Exhaust High Efficiency Particulate Air (HEPA)

i. Supply & exhaust HEPA filters (Qty-depending on air quality and lab design, kindly specify in tender) having particle size 0.3 µm particle size with efficiency of 99.99%
ii. All air supply and exhaust should be fine filtered
iii. All fresh air ducts and their outer inlets should be installed with insect proof barrier
iv. 2 stages Pre-filter with ASHRAE specifications –Pre Filter and Fine Filter
v. Supply & exhaust GI fixture

Air Duct:

- The ducts shall be designed for 100 mm of WC pressure.
- Ducting shall be complete with dampers, vanes, anchor fasteners, supports, access doors, neoprene rubber gaskets etc.
- All the ducts shall be supported with the building structure with GI threaded rods of 10mm dia. and spring isolators of GI or coated suitable for clean rooms.
- All the edges with minor leaks should be sealed with silicon sealant.
- The ducts fabrication work shall be carried out in dust free environment.
- During the construction, the contractor shall temporarily close duct openings with sheet metal covers to prevent debris entering ducts and to maintain opening straight and square.
- All duct work shall be of high quality approved galvanized sheet steel guaranteed not to crack or peel on bending or fabrication of ducts. All joints shall be air tight and shall be made in the direction of air flow.
- The ducts shall be re-inforced with structured members where necessary, and must be secured in place so as to avoid vibration of the duct on its support.

Air Duct Insulation:
Thermal Insulation: All ducts must be insulated using high purity nitrile rubber as per following specifications.

- Supply air duct insulation with 19 mm thick nitrile rubber with aluminized surface
- Return air duct insulation with 19 mm thick nitrile rubber with aluminized surface

Air change:
Air changes should be as per guide lines to obtain the desired air quality standard for Class 10000 (50-60 air changes).

Air-Tight Damper:
Air tight dampers should be GI and permit airtight criterion for decontamination. The system should be equipped with airtight damper to control the positive pressure stable. The volume dampers shall be of an approved type, lever operated and completed with locking devices which will permit the dampers to be adjusted and locked in any positions and clearly indicating the damper position. After completion of the duct work, dampers are to be adjusted and set to deliver air flow as specified on the drawings. The damper blades shall also be of extruded aluminum sections. The grill flange shall be fabricated out of aluminum extruded section. Grilles longer than 450 MM shall have intermediate supports for the horizontal louvers.

Diffusers:
The ceiling type square diffusers shall be of aluminum extruded sections with flush or step down face, as specified with fixed pattern and neck. All supply diffusers shall be provided with extruded aluminum dampers, with arrangement for adjustment from the bottom.

Filters:

- The Clean Room ceiling system shall include ULPA/HEPA filter ceiling modules.
- The filters will be used as terminal air distribution device. The air supply plenum shall be connected directly to a connecting collar on the filter top with individual GI damper in the plenum and flexible ducts.
- The filters shall be H14 class of HEPA filters as per EN1822 with an efficiency of 99.99% down to 0.3 micron for class 10000. Filter size shall be matching with 600x600 mm grid size.
- The filter shall have expanded sheet metal face guard.

- The filter shall be held in place utilizing 'hold down' devices with the Ceiling grid using channel on the filter top and T bolts in the ceiling grid pressing the filter against ceiling grid.
- Filter media shall be bonded to extruded aluminum cell sides.
- Supply casing shall be factory mounted to filter cell sides.
- The face of the extruded aluminum frame shall align with the face of the ceiling grid system.

Differential Pressure Gauge:
The Clean Room facility must have provision of differential pressure gauge (Qty: As per design)

Walls and Partitions:

i. A specialized wall panel system for the inner perimeter of lab made up of PUF panel (sealed from all 6 sides) not less than 80-90 mm thick with wall (PUF Insulation density: 40+2kg/m3 Both Side Skin: minimum 0.60 mm thick Permanently Color coated Galvanized mild steel as per IS:277, Galvanized Grade 120 GSM / M3. Yield Strength is 240 MPA.) The panels shall be specifically for clean room and shall not be affixed utilizing cam lock arrangement between them
ii. The gaps in between panels to be filled by suitable color matching room temperature vulcanizing (RTV) sealant
iii. The modular panel should be suitable for negative pressure and must be airtight and chemical resistant
iv. The wall panel thickness should vary between 80 mm and should have a stronger bearing and a mass anti-bending capacity
v. The modular panel must have capacity of anti-negative pressure around -2000 Pa, and should not be deformed in the negative pressure environment
vi. There must be provision of cut-outs on the walls to accommodate double fixture viewing glasses, electrical outlets, monitoring devices, emergency warning systems, pass-thru cabinets

Ceiling:

i. The specialized ceiling should be of PUF sandwiched paneled 60 mm thick walk able type
ii. The solid ceiling panels shall be specifically for clean room and shall not be affixed utilizing cam lock arrangement between them
iii. Ceiling panels must be constructed with either upside or room side, finishing with GI panel as same as the wall panel materials
iv. The ceiling grid should provide a leak proof filter grid system.
v. The grid shall be designed for gasket seal type ULPA/HEPA filters.
vi. Lighting shall be mounted on to the ceiling grid.
vii. HEPA/ULPA filters to be fixed to filter grid and properly sealed to prevent ingress of air bearing particles or other contaminants.
viii. Ceilings to be sealed to prevent ingress of air bearing particles or other contaminants, from the ceiling void.

Covings:
Covings, used to link wall-wall, wall-ceiling, wall-floor, etc., should be made of industrial plastic/ Extruded Aluminum powder coated " Clip ON " Type coving with Male / Female and shaped by Mould manufacture Smooth radius arc should be installed at all inner, outer of wall-to-wall, wall to floor and wall-to-ceiling joints to form a smooth and continuous round surface for easy cleaning purpose. Connectors for entire wall to wall

and wall to ceiling and having similar construction and finished as the wall. Should be properly sealed with silicon sealant with wall and ceiling. Color to match with wall panels.

Specialized Flooring (Epoxy- Joint Less)

High quality - universally accepted, epoxy flooring, possessing self-levelling physical properties on account of which a dust-free /seamless uniform floor finish is achieved. Along with good abrasion resistance, the flooring should also displays equal resistance to light foot and vehicular traffic.

i. The containment must have waterproof and chemical resist epoxy flooring 2+2 mm thick (as per guidelines laid down by WHO) above the base, the floor (for entire Area) should be first covered by epoxy material for waterproof and leveling purpose.
ii. Around the inner perimeter of the walls should be carefully sealed with RTV sealant and all coved wall corner joints should be carefully formed and sealed
iii. Conductive copper grid should be laid between the floor for static electricity.
iv. Installing an earthling system is a prerequisite for lab floors. The material used for the earthling system can be brass, copper or stainless steel.

Customized Door:
Specialized doors **(2100x2100mm double door and 2100x1000mm single door)** to be installed in the controlled area should be powder coated GI sheet Honey Comb sandwiched with observing window, self-closer and handle, lockable, airtight and self-closing type with drop seals

i. Doors should be of Galvanized Sheet, 0.6 - 0.8mm thick, powder coated finish, having viewing window SS Handles, SS hinges and door closers
ii. Doors inside the controlled area (Air lock) should be interlocked
iii. Emergency doors with panic latch.

Cleanroom windows:
Flush double-glazed fixed to the partition panels for the required sizes and quantity. (Tempered Glass thickness minimum 6 mm). Glass of corridor window as well as outside to be of the clean room transparent as per clean rooms requirements. Number and size of Windows as per the Cleanroom design/layout requirements.

Air Shower:

• The Air Shower shall be a high velocity, low pressure type system in accordance with Federal Standard 209E
• The Air Shower will provide normal entrance to and exit from a contamination controlled area.
• The Air Shower shall be a completely self contained unit, equipped with air filtration systems, blowers, motors, controls, solid-state programmable microprocessor, interlocking doors, lighting, and pre-wired electrical panel.

Air Shower Features:

Designed for 1-2 persons w/ two sides blowing
Rust free construction for longer life
Nozzles 12-16 Two Sides
HEPA Filter - Two Pieces

Air Shower Time	0 ~ 120 seconds Adjustable
Spurt Wind Speed	18~25 m/s
Power	440V AC, 3 Phase, 50 Hz
Filter Efficiency	99.99 %
Cleanliness Level	Class 100
Noise level	Less than 60 db
Shower jet velocity	More than 20±2 meter/second
Door	Aluminum fabricated with safety glass and electromagnetic locks
Construction	Aluminum / Powder coated MS / 304 - 316 Stainless steel

Standard fittings
- Fluorescent light
- Pre-filter (washable)
- HEPA filter
- Nozzle (Fixed or Adjustable)
- Emergency stop buttons (both sides)
- Blower motor assembly
- Anti slip floor
- Door bell
- Door closers
- Door handles
- DQ / OQ / IQ / PQ

Air Curtain:
All Metallic Casing – High in fire resistance, compact in overall construction, convenient in installing, easy for cleaning and maintenance.

Electrical System:

The electrical connections should be fitted in such as way that there will be barrier between PUF and electrical connections. Any spark or any other fault should not come in direct contact with PUF.

Power outlets on the wall panels for all the equipment's. These include both 3-Phase and Single-Phase power sockets. All power sockets and switch boards should be cleanroom compatible and as per the utility as per clean rooms and comfort area layout design.

All cables/wires to be copper conductor and to be approved makes. All PCC/MCC to be freestanding type with MCCB, MCBs and adequate indicating, measuring and protective devices. All circuit to be protected with MCBs, ELCBs and MCCBs, as per requirement. Electric load estimates along with single line diagram to be submitted with technical offer.

The vendor should supply and install the following items:
- MCC Panels for HVAC Equipment and for Power distribution system
- Starter panels for AHUs motors.
- Local control /Emergency push button for all motors
- Power and control cabling and earthling for HVAC/cleanroom areas.
- Distribution panels and Main control panels along with controls.
- Required wiring & earthing from these panels up to the process equipment's.

- Lighting and power distribution through GI conduits /cable management system.

The Clean Room Facility must be supplied with Electrical system having following features:

i. Electrical wires (Havells/ Finolex/ Anchor/ Plaza/ Equivalent) lightings, Philips/Havells electrical boxes
ii. Sockets Brand: Legrand/ Havells/Equivalent
iii. LED Lightings: Philips/Havells to give 600-1000LUX
iv. Electrical box should be customized according to the actual situation, the modules should be of Schneider/ Havells or equivalent, the breaker and switch should be made of Havells/Anchor or equivalent
v. There will be 15.0-5.0 amp (dual) Sockets (12-14 Nos.). Location of the same will be decided at the time of construction
vi. There will be 20 KVA 3 Phase connections (1 No.), 20 KVA 1 Phase connections (1 No.) and 10 KVA 3 Phase connections (2Nos.) inside the room to be connected with instrument tables. Location of the same will be decided at the time of construction

The cables shall be laid as per IS-1255/1967, Indian standard code of practice.

- The cables shall be laid, as per drawings in the ducts/pipes/trays etc. along a short and convenient route between switch board and the equipment, (either in trenches, on wall or on hangers, supported from the slab). Cable routing shall be checked at the site of work to avoid interference with structure, equipment etc. Where more than one cables are running close to each other, proper spacing should be provided between them.
- The radius of bends of the cable should not be less than 12 times the overall dia. of cable in order to prevent undue stress and damage at the bends, the cables should be supported with wooden cleats on M.S. Supports, when laid in trenches, or wall/ceiling suspended hangers. When laid underground the cables should be covered with fine soft earth and protected with 2nd Class bricks. Suitable G.I. Pipe shall be used wherever cables are laid under the roads etc.

Earthling:
Separate earthlings to be ensured for Electrical panel and Equipment.

Fire Extinguishers:
2 Nos. of Foam based fire extinguishers should be provided.

Biometric Access:

Complete system for Biometric Finger Print based Access Control System. We are proposing Biometric Access (fingerprints) control system for restricted entry to the labs with following specifications:
• The controller shall have a verification time of less than 1 sec for 1:1 , 1:N match for less than 1000 templates. It shall be possible to connect multiple such door controllers in the same network and control more doors
• The controller shall have Tri Color LED indications in form of bar to display verification results.
• The controller shall indicate to the system when the door opened and closed after an authorized access or request to exit operation. The unused lock release time has to cancel when the door closed.
• The door controller shall work between a humidity range of RH 5~ 95 % non condensing humidity and between temperature range of 0 to 45 degrees.
• The controller shall store not less than 500 finger print templates.

• The controller should communicate with TCP/IP
• The controller shall be CE Certified.
• The controller shall be configurable via Electromagnetic Lock / Drop Bolt Lock with fail secure mode / Electronic lock with mechanical Lock.
• The controller shall have an Exit Switch provision to open the door from inside.

Networking/ Internet:
There should be at least 4 Input — output sockets in the Lab. The required cabling to be completed for Networking with the Institute HIS. These points are to be integrated with the nearest junction box of HIS.

Drain Piping:
• The drain piping shall be medium class galvanized steel as per IS 1239/1979.
• Pipe crosses shall be provided at bends, to permit easy cleaning of drain line.
• The drain line shall be provided upto the nearest drain trap and pitched towards the trap.
• Drain lines shall be provided at all the lowest points in the system, as well as at equipments, where leakage of water is likely to occur, or to remove condensate and water from pump glands.

Pass box:
Dynamic Pass box **(Qty 1 Nos.)** shall be installed for easy and safe transfer of material with following features. The pass box should have following features
a. Made of 304 stainless steel
b. Magnetic Door interlocking
c. Internal Dimension shall be 600x600x600 mm
d. Equipped with short wave UV light for decontamination

Sterile Garment Cabinet
Cabinets shall be equipped with a blower and a HEPA filter in a fully contained enclosure constructed of powder-coated steel sheets. They shall store clean room garments in a visible and organized manner, while at the same time removing particulate contamination from garments as they are stored and removed. Dimensions Clean air storage space L x W x H (900 x 600 x 1200 mm)

Validation:
The validation, DQ, IQ, OQ, PQ, DRAWINGS TEST etc. shall be done and all CERTIFICATES to be provided

Gas and chiller station outside the lab:

Base to be made with concrete platform on ground outside the lab at the area marked in the layout. Size of Platform is 8'x20'. There should be a room constructed over the platform. The Room walls and ceiling should be made with PUF panels 80 - 100mm thick. There should be 3-4 electrical switches with sockets, sufficient lightening and air circulation inside the room. The door of room should be made with PUF panel with viewing panel 18"x24".

2 nos. of 1.5 tons Split ACs, 3 star rating, with switch over option to switch on ACs alternatively after every 4 hours should be provided inside the UPS room. 1 no. of 1.5 Ton Split AC, 3 star rating, should be provided for service area.

Gas system for Lab:

High purity gas distribution system for 4 gases using ¼" both side polished seamless stainless steel 304 to be installed inside the clean lab. The network should be complete using valves, tees, cross, point of use single stage regulators etc as per requirement. Gas bank will be developed in the Service area.

Polypropylene Fume Hood - Sliding Sash

Polypropylene exhaust fume hoods Systems with vertical sliding sash, ductwork and HVAC systems to eliminate toxic fumes, vapors and gases. The automatic safety controller provides constant airflow monitoring, automatically maintaining the operator-specified face velocity as the sash is raised or lowered.

Specifications:

- Automatic safety controller monitors airflow face velocity
- Vertical sliding safety glass sash
- Dual wall construction allows for front mounting of services such as water, gas, or electric
- Internal baffling provides even airflow for maximum containment
- Airfoil on sash lip promotes consistent laminar airflow
- Polypropylene construction for excellent chemical resistance. The result: NO RUST
- Integral vapor-proof fluorescent lighting
- Power requirement: 220V AC
- Vented polypropylene base cabinets
- Remote services —Gas(Ar), Nitrogen, Water (RW), Compressed Air.
- 4 nos electrical outlets
- Polypropylene sinks and water fixtures

Ducting, Vertical Flow Fume Scrubber and suitable blower with Piping for recirculation water, make up fresh water & drain connection etc. Civil Foundation for scrubber should be made by vendor

Following will be provided:
Fresh water for Scrubber
Required Drain connection near to the Scrubber

Furniture for Lab:
1 No. of Stainless steel SS304 rack 3'x1'x6' (WxDXH) with 4 shelves should be provided.
1 No. of Stainless steel SS304 table 4'x2'x33" (LxBxH) should be provided.
4 Nos. of SS 304 stools should be provided.

Specifications are basic essence of the product. It must be ensured that the offers must be strictly as per our specifications. At the same time it must be kept in mind that merely copying our specifications in the quotation shall not make the parties eligible for consideration of the quotation. The technical bid shall be evaluated for acceptability by the technical committee and may call the tenderer for discussion & previous site visit (manufactured by tenderer in past).