

## **E-TENDER NOTICE**

*TENDER NO: IUAC/NIT/14/BKG/2018-19*

*Dated: 14/11/2018*

Electronic bids are invited through E-Procurement Portal under two bid systems from eligible / reputed parties for the work / supply of “ Round the Clock Operation and Maintenance of HVAC Phase-I ( 2 x 200 TR – Screw type Chilling Units ), associated equipment, Cooling & Heating Equipment at IUAC office and housing campus, New Delhi- 110 067” at IUAC.

Tender Documents may be downloaded from Central Public Procurement Portal <http://eprocure.gov.in/eprocure/app> and [www.iuac.res.in](http://www.iuac.res.in)

Aspiring Bidders who have not enrolled / registered in e-procurement portal should enroll / register before participating through the website <http://eprocure.gov.in/eprocure/app>.

Only bids received through e-procurement portal will be considered for opening.

IUAC reserves the right to accept / reject any/all tenders in part/full without assigning any reasons thereof.

The Earnest Money Deposit shall be in the form of demand draft issued in favour of “Inter-University Accelerator Centre, New Delhi” and it should be deposited in IUAC before the bid opening.

Any Corrigendum/Amendments in respect of above tender shall be issued on our website [www.iuac.res.in](http://www.iuac.res.in) and website <https://eprocure.gov.in> only.

**TENDER DOCUMENTS FOR ROUND THE CLOCK OPERATION AND MAINTENANCE OF  
HVAC PHASE-I ( 2 X 200 TR – SCREW TYPE CHILLING UNITS ), ASSOCIATED  
EQUIPMENT, COOLING & HEATING EQUIPMENT AT IUAC OFFICE AND HOUSING  
CAMPUS, NEW DELHI- 110 067.**

**TENDER ENQUIRY NO: IUAC/NIT/14/BKG/2018-19**

**DATE OF OPENING: 07/12/2018**

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**INTER-UNIVERSITY ACCELERATOR CENTRE ( IUAC )**

(Formerly Nuclear Science Centre) Autonomous Body of UGC  
Aruna Asaf Ali Marg, Post Box No. 10502, NEW DELHI - 110 067 ( India)  
Phone : 091-11-24126022/24-26/29

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## TENDER NOTICE

### NOTICE INVITING TENDER NO. - IUAC/NIT/14/BKG/2018-19

**Name of the Work :** Round the Clock Operation and Maintenance of HVAC Phase-I ( 2 x 200 TR – Screw type Chilling Units ), associated equipment, Cooling & Heating Equipment at IUAC office and housing campus, New Delhi- 110 067.

Estimated Value	: Rs. 2966095 per Annum
Earnest Money	: Rs 60000/- in the form of D.D
<b>Last Date &amp; Time of Submission of Tender ( Part A &amp; B )</b>	<b>: 06/12/2018</b>
<b>Date &amp; Time for Opening of Tender (Technical bid - Part-A)</b>	<b>: 07/12/2018 at 15:30 hrs</b>
Date & Time for Opening of BOQ (Price Bid - Part-B)	: To be intimated later on to technically qualified bidders.
Address for submission of tender	: Administrative Officer (S&P), Inter-University Accelerator Centre Aruna Asaf Ali Marg Post Box: 10 502 New Delhi-110067.
Place of Opening of the Tender	: Committee Room, IUAC
Tender document Fee	: Rs 500/- Cash or DD ( No Fee for downloaded Tender )

## **GENERAL CONDITIONS OF TENDER :**

1. **Submission of Tender :** Tenders should be uploaded in E – Bid in two Parts separately, i.e. "Technical bid" (Part-A) and "Price bid" (Part-B).
2. **Technical Bid (Part-A) :** In this bid, the bidder should upload his company profile, history and structure of firm, name of directors/partners/proprietor with technical staff, list of plant, machinery & tools in his possession, copies of work orders successfully executed during the last five years.

The following are minimum essential for technical qualification:

A.) Earnest Money Deposit.

B.) Copy of work orders for "Round the Clock Operation and Maintenance of Central AC plant ( Centrifugal / Screw type only ) of at least 240 TR Capacity” successfully executed during the last 5 years for reputed Public Ltd. Companies, Public Sector, Govt. Institutions and autonomous bodies in the following manner :

Three similar works, each of value not less than Rs. 12 lacs per annum

or

Two similar works, each of value not less than Rs. 15 lacs per annum

or

One similar work of value not less than Rs. 24 lacs per annum.

C.) Satisfactory work completion certificate with contract details for the work order submitted for eligibility. The work order and completion certificate should be for the same work.

D.) Copies of EPF, ESI & GST and a copy of latest annual EPF Statement of existing workers.

E.) All the pages of NIT along with blank Price bid duly signed & stamped by the bidder as a token of acceptance of the NIT conditions.

IUAC reserves the right to visit the work sites mentioned by bidders as proof of experience. The bidder will have to arrange for such visit.

Definition of similar work: Similar work shall mean having experience of "Round the Clock Operation and Maintenance of Central AC plant ( Centrifugal / Screw type only ) of at least 240 TR Capacity”.

3. **Price Bid / BOQ (Part-B):** In this bid, the bidder is required to quote his prices as per BOQ (Annexure-VIII). The special conditions of the contract, scope of work, equipments covered and other details are enclosed in Annexure-I to VII. The bidders should quote unconditional rates in the BOQ section.
4. **Earnest Money:** An earnest money of Rs 60,000/- ( Rupee Sixty thousand only ) has to be deposited in IUAC before bid opening. The EMD shall be only in the form of Bank Draft payable to Inter University Accelerator IUAC, payable at New Delhi. No Cheques/Cash shall be accepted as EMD. EMD of technically disqualified bidders will be returned within 15 days from the date of evaluation of the technical bids. The refund of EMD to the lowest 4th bidders onward shall be made within 15 days from the date of opening of price bid. The refund of EMD of the L2, L3 bidders shall be made after award of work and site mobilization by the successful bidder. The EMD of the successful lowest bidder (L1) shall be held back with IUAC as a security deposit and will be released after completion of contract and site clearance.

5. **Exemption from EMD:** Companies registered with National Small Scale Industries Corporation (NSIC) and Micro, Small & Medium Enterprises (MSME) will be given relaxation as per Govt. rules. Copy of Exemption certificates shall be uploaded.
6. **Validity of Tender:** Tender shall be valid for our acceptance without any change in rates and NIT conditions for a period of 90 days from the date of opening of price bid.
7. **Escalation:** Contractor will be given actual reimbursement of the increased / enhanced / reduced wages paid to his workers on the basis of increase / enhancement / reduction in statutory minimum wages as decided by the labour department, Govt. of Delhi from time to time. Other than this, no escalation shall be paid during the execution of contract period.
8. **Scope of Work:** Detailed scope of work are enclosed with this NIT as per Annexure I-VII.
9. **Deviations:** No deviation from the stipulated terms and conditions will be allowed. Tenders should be unconditional.
10. **Site Conditions :** Contractor shall acquaint himself fully with the site conditions and the working environment of IUAC before quoting his rates. No Compensation on account of any site difficulties will be entertained, at a later date, after award of the works. The plant & machinery will be handed over to the contractor on " As is Where is basis " and **the entire Liability of smooth operation & maintenance of the system will rest with the successful bidder.**
11. **Correspondence :** All the correspondence in respect of tender/contractual obligation shall be addressed to A.O.(S&P), Inter University Accelerator, Centre, Aruna Asaf Ali Marg, New Delhi-110067.
12. **Terms of Payment :** The payment shall be made on submission of the bills (format to be approved by IUAC) by the contractor after due certification by the IUAC person responsible for supervision of the work in the following manner:
  - a) Monthly bill shall be raised by the contractor on successful completion of every month as per the schedule of prices quoted in Annexure-VIII. The contractor should submit the bill on 1<sup>st</sup> of every month. The payment shall be made after due certification by the IUAC Engineer-In-Charge responsible for supervision of the work, who may at his discretion effect deductions for non-performance or delayed/improper work. The payment will always be made by ECS after deduction of applicable Income Tax (TDS).
  - b) Amount towards mandatory requirements such as EPF & ESI shall be paid by IUAC only on submission of the relevant authenticated documents duly self attested. It is mandatory for the contractor to submit the copies of employees wage bill along with EPF & ESI receipts, ECR statement, paid wages sheet duly signed by employees and the attendance record.
  - c) Submission of bill/receipt on account of payment made to statutory bodies/authorities i.e. ESI, EPF, GST etc. need to be adhered with strict compliance. Non-compliance in regard to the above may lead to a penalty of Rs. 5,000/- plus unpaid amount. Director's decision will be full and final as far as release of payment to the contractor is concerned.
  - d) There should not be any deductions e.g. advance etc. from the employees wages in the Wages Sheet except for absentees.
13. **Security Deposit:** On award of work, contractor shall furnish a Bank Guarantee valid for the entire contract duration plus 2 (two) months for the amount equivalent to one month's contract value. In case of extension of contract after first year, fresh bank guarantee for the new contract has to be submitted for the contract value. Besides the above, the EMD of the successful lowest bidder (L1) shall also be held back with IUAC and will be released after completion of the works and site clearance.

14. **Labour Laws:** The contractor shall abide by all the prevalent rules and regulations related to labour laws, minimum wages, accident, workmen compensation act, workmen insurance, ESI, EPF, etc. This will be the sole responsibility of the contractor. IUAC will not be a party at any stage in any of the disputes relating to the above. **In case, any liability arises due to non-conformance by the contractor, under no circumstances IUAC will be liable for the same.**
15. All the manpower deployed at site by the contractor should be given one weekly off in every 7 days or as many Sundays in any given month. If in case they are performing reliever's duty, they should be paid extra for the same by the contractor. In addition to the above, 3 National Holidays (26<sup>th</sup> Jan, 15<sup>th</sup> Aug. & 2<sup>nd</sup> Oct.) and any special mandatory holidays as declared by Govt. of India from time to time should also be given to the manpower. The amount to be incurred by the contractor towards national holidays should be taken into account in overhead & profit component.
16. **Minimum Wages:** The monthly wages to be paid to the personnel shall never be less than the minimum wages decided by the labour department of Govt. of Delhi from time to time in addition to benefits like EPF/ESI calculated on total monthly wages (not on any part of wage). In case of revision ( upward / downward) in wage by Labour Department of Govt. of Delhi from time to time, the difference shall be paid / recovered by IUAC on submission of paid wage sheet. If contractor wishes to pay more than the minimum wages to his manpower, the same may be taken into account in overhead & profit component.
17. **Monthly Wages:** The contractor will disburse the monthly wages to his persons on or before 7<sup>th</sup> of each month by NEFT / online transfer to employee's bank account. However, IUAC reserves the right to make payment of wages to contractor's persons directly in the event of receipt of any complaint from his person(s) regarding delayed payment or non-payment of wages and recover the amount so paid along with 10% overheads from the contractor's bill. Delay in making monthly wages to his staff working at IUAC will be considered as disqualification on contractor's part and this will lead to termination of the contract. In such a case, IUAC's decision will be final.
18. **EPF and ESI:** EPF and ESI numbers of manpower deployed at site by contractor should be furnished to IUAC along with the documentary evidence. EPF statement of all the manpower deployed by the contractor should be submitted to us periodically or as and when asked for. Original ESI cards of employees should be shown to IUAC for verification and photocopies of the same to be submitted. On the expiry of contract, contractor has to submit the clearance certificate from all the manpower deployed by him indicating no dues towards wages, EPF settlement etc., Contractor has to sign the EPF settlement papers for the people who leave the organization while working at IUAC and also after completion of the contract in our presence in case of a complaint or a dispute between contractor and his workmen.
19. **Rules governing the Contractor's employees working in the IUAC Premises:** The contractor 's employees working inside the IUAC campus will abide by the IUAC terms. Any damage to the IUAC property due to mishandling, carelessness on the contractor's or his workman's part will be recoverable from the contractor's bills.
20. **IUAC reserves the right** to reject any or all the tenders in full or in part without assigning any reasons whatsoever, and the decision of IUAC in this regard will be binding on all the bidders. Tenders not complying with any of the provisions stated in this tender document are liable to be rejected.
21. All the persons deployed by the contractor at IUAC will have to carry valid gate-passes, which will be issued only after submission of their bio-data in desired format. Any negligence / offense on their part will attract immediate removal from site. It is mandatory for all the contractor's employees to wear badges with their name & company's name embossed and display it.

22. All the employees will have to be covered under insurance against any personal accident and IUAC will not be liable for payment of any compensation on that account.
23. All the persons deployed by the contractor at IUAC will have to get the police verification done from competent authorities. The contractor has to submit the police verification certificate and acknowledgment slip of the same for all the employees to IUAC.
24. During execution of work, the contractor should follow all standard norms of safety measures/ precautions to avoid accidents/damages to men, machines and buildings. On non-adherence of this clause, suitable fines, as decided by the Director, IUAC shall be imposed.
25. Manpower deployed by the contractor at our site for carrying out contracted works is strictly prohibited being associated with any other works other than the awarded works on the campus.
26. If any Contractor's person is found to be misbehaving or to be negligent in the duties assigned to him / her, IUAC reserves the right to seek his / her removal from IUAC, with suitable replacement within 24 hours.
27. No material belonging to the contractor whether consumable or non-consumable should be brought inside the IUAC campus without proper entry at the Main gate nor any material should be taken out without proper gate pass issued by IUAC.
28. In case of any injury to contractor's person at IUAC campus, due to any reason, the contractor shall be responsible for taking the person to the hospital/nursing home /dispensary for treatment at his own cost. If in case of emergency IUAC vehicle is used, IUAC incurs any expenditure on the treatment of the person, the contractor will be suitably charged for the same.
29. Under no circumstances the contractor will be permitted to sublet his work to another contractor, while working at IUAC. Likewise the Contractors persons will not be permitted to undertake any private jobs in the IUAC Campus.
30. IUAC will provide free water and electricity during O & M work at IUAC, at one point. The contractor has to make his own arrangements for installation of power and water from that point as per his requirements.
31. **Termination of Contract:-** The Director, IUAC reserves the right to terminate the contract immediately on account of poor workmanship, failure to mobilize the site, non-compliance of set norms/ specifications for the works, delay in progress of work, violation of any contract provisions by the contractor. In such cases, the Bank Guarantee equivalent to one month's contract value held with IUAC and the EMD will be forfeited by the IUAC. The contract can also be terminated at the request of either party with two months notice period or else to pay two months O&M bill value in-lieu of the notice period.
32. Any dispute arising out of this contract will be subjected to jurisdiction of New Delhi/Delhi.

Accepted

(signature of bidder)



**SPECIAL CONDITIONS OF THIS CONTRACT**

1. The contractor has to ensure the promptness in service and this is basically the essence of the contract. **The contractor has to ensure 99% up-time of the system. All endeavor will be made by the contractor to restrict to preventive maintenance and unforeseen outages will be kept to the minimum.**
2. While all efforts will be made to complete the maintenance activities in the normal hours, yet if the situations so warrant that the maintenance has to be done beyond the normal hours the same will be done by the contractor at no extra cost to IUAC and the monthly quoted price will be deemed to cover such costs.
3. Log - Book supplied by us will be maintained by the operator in- charge in each shift. The readings for the previous day will be got countersigned the subsequent day by the Engineer - in Charge.
4. The maintenance log book supplied by us will be filled each day by the concerned supervisor of the successful bidder, mentioning the details of the activities carried out during the day and the materials consumed in each maintenance activity. This maintenance log book will also be countersigned the subsequent day by the engineer – in charge.
5. All the spares required in O&M contract will be provided by IUAC.
6. Inside room conditions will be maintained as per directions of the Engineer - in charge , but within design parameters.
7. The AC System is a round the clock, 24 hour per day, operating plant, all round the year and the site working has to be accordingly arranged by you all the year round including Sundays and Holidays. Furthermore the maintenance gang has to be so arranged by you that it is geared / available for breakdown maintenance work 24 hours of the day.
8. **Manpower :** The plant and equipments will be manned by operators and mechanics having adequate skill and knowledge.  
The contractor shall have to deploy the following minimum manpower during the period of contract :

S. No.	Details	Category	Nos.	Qualification	Experience
	<b>General Shift</b>				
1.	Technician Cum Supervisor	Graduate and above	1	3 years Diploma in R&A/C/Mechanical/Electrical or 2 years ITI in R&A/C/Electrician	2 years for Diploma qualified 8 years for ITI Pass in utilities / relevant
2.	R&AC Mechanic	Skilled	1	2 years ITI in R&A/C/Electrician	3 years in utilities or relevant
	<b>Shifts</b>				
3.	Operator	Skilled	3	2 years ITI in R&A/C/Electrician	3 years in utilities or relevant
4.	Reliever Operator	Skilled	1	----Do----	-----Do---
5.	Helper	Un-skilled	3	10 <sup>th</sup> class	2 years in technical field
6.	Reliever Helper	Un-skilled	1	----Do----	-----Do---

i) All your manpower should be got approved by engineer-in-charge before deployment at site. Documentary evidence of qualifications and experience to be furnished before deployment of manpower.

ii) There should be three shifts in a day equally spaced. Each shift should be manned by one operator and one helper. Reliever operator/helper will relieve shift operator/helper and will work in general shift for the remaining days of the month (i.e. general shift - 13 days a month ). General shift should be manned by minimum 1no. Technician Cum Supervisor, 1 no. R&AC Mechanic, operator / reliever for 13 days and Helper / reliever for 13 days.

iii. Contractor may have to deploy additional maintenance gang during annual servicing / overhaul for Window air conditioners, outdoor condensing units, Water coolers, Desert coolers and geysers etc.,and also depending upon the requirement, which should be geared-up for 24 hours breakdown maintenance works, in-addition to minimum manpower as mentioned above without any extra cost to IUAC.

## **9. Deductions / Penalty:**

i) Wage will be deducted for each unattended duty in General shift duty. If employee is absent for more than 2 days, contractor should immediately make an alternative arrangement. Operation shift duty should not be left un-attended under any circumstances. Person to continue the duty till the arrival of reliever.

ii) If the maintenance activities are not carried out as per the response time indicated in the Annexure - V, suitable deductions on proportionate basis will be made from contractor's bills and IUAC reserves the right to determine the amount in question.

iii) If the breakdown activities ( interruption in the plant operation ) are not attended to on emergency basis, deductions at our discretion will be affected from contractor's bills instead of response time indicated in the Annexure - V.

iv) The IUAC reserves the right to get the preventive/breakdown maintenance works done by some other source if the contractor is not attending to the same. In such cases, the cost involved, overheads + penalty for the same will be debited from contractor's bills.

v) In case of non availability of sufficient consumables /tools / instruments, contractor's site Supervisor shall be given a time of 24 hours to arrange the same. If fail to comply, IUAC shall arrange the same on its own and recover expenditure from the contractor along with 10% departmental charges.

**10. Consumables:** Supply of all consumable items (as per Annexure-VII) are required for day to day operation and maintenance work. They are deemed to be included in contractor's scope and cost of same to be taken in item no. 4 of Annexure – VIII.

**11. Tools & Tackles:** The contractor will provide all necessary tools, fixtures, equipments, measuring instruments (as per Annexure-VI) or extra required for smooth operation and maintenance work. Safe custody of all such T&P will be contractor's sole responsibility. They are deemed to be included in contractors scope and cost for the same to be taken in item no. 5 of Annexure – VIII.

**12. Safety Shoes :** The contractor will provide one pair of Safety Shoes of Liberty make Art. No. 7198-01 (N) /Bata/Action make or equiv. Model to each of the employee deployed at site including two pair of socks. The make/model no. of shoes should be got approved by us before procurement of the same. In the event of extension of contract after first year, fresh pair of safety shoes to be provided to each

employee deployed at site. They are deemed to be included in contractor's scope and to be quoted separately as in item no. 5 of Annexure – VIII.

13. **Uniform** : The contractor will provide 2 pairs of uniform to each of the employee deployed at site including stitching charges. The quality/colour of the uniform should be got approved by us before procurement of the same. In the event of extension of contract after first year, fresh pair of uniform (2 pairs) to be provided to each employee deployed at site. They are deemed to be included in contractor's scope and to be quoted separately as in item no.5 of Annexure – VIII.
14. The maintenance work shall be carried out as per the norms set by the manufacturer of respective equipment, specification and specific instructions as may be issued by the IUAC's representative responsible for work from time to time.
15. Contractor should depute a qualified supervisor dedicated for this site, who will co-ordinate work execution activities and interact with IUAC representative responsible for supervision of work.
16. Watch and Ward of entire Air-Conditioning System Ph-I installation till the system is taken back by IUAC shall be the sole responsibility of the contractor and pilferage, if any, shall be entirely to his account.
17. This contract is **TECHNICAL IN NATURE AND IS NOT A LABOUR SUPPLY CONTRACT** and therefore managing all the affairs of the Air-Conditioning system and the associated sub-systems in a responsible and dedicated manner will be entirely the responsibility of the bidder who is awarded the works. Contractor can not take the plea of minimum manpower deployed at site and escape from the overall responsibility. If necessary, contractor has to depute additional manpower for preventive/breakdown maintenance activities.
18. The contract is initially awarded for one year period. However, contract may be renewed for successive years depending upon the performance in previous year and by mutual agreement. However the terms and conditions will remain same. There is no binding on IUAC to renew the contract after first year.
19. The successful bidder should depute two responsible people one week before actually taking over the system to get acquainted with the system without any extra cost to IUAC.

**SCOPE OF WORK :**

The following scope of work is only indicative and contractor is strongly advised to use his own judgment in evaluating the quantum of work involved in Round the Clock Operation and Maintenance of a Central Air Conditioning plant and associated system, low side systems, Window A/C 'S, Split A/C's, Air Washers, Desert Coolers, Water Coolers, Ventilation Systems, geysers etc installed at IUAC lab complex, utility building, beam hall - I & III, auditorium, guest houses, hostels, flatlets and housing etc. The bidder is strongly advised to understand the criticality of the application and the importance of maintaining more than 95 % up time of the systems.

It also includes to check, operate and maintain compressed air system, lift, high pressure gas cylinders, material handling systems and central fire hydrant system.

1. To operate and maintain 2 x 200 TR Screw type Water Cooled water Chilling Units central AC plants with all the equipments ( including low side equipments ) as per Annexure-III, round the clock throughout the year (365 days of the year). It is expected two more chillers of 250 TR capacity including pumps, cooling towers will be installed soon. The same should also be taken into consideration by bidder.
2. To check and clean all AHU's, AHU blowers, AHU blower motors and adjust/ replace belt, belt tensions, if necessary (once in a fortnight / or as per requirement). To grease the blower motors.
3. To operate / service / overhaul the Window/Split/duct able Air-Conditioners/ water coolers/ cooling systems as per enclosed list of equipments, as and when necessary. To attend to the breakdown complaints of the same. To charge the window / split air conditioners with refrigerant on requirement. To arrange brazing set etc., for leak repairing/fixing.
4. To operate / service / maintain R.O. Water Purifiers for drinking purpose as per requirement. However they will be under OEM AMC services.
5. To check the refrigerant system for leakage of refrigerant and topping up of the same after rectification of the leakage.
6. To arrange gas cylinders & condensing unit for removal of Refrigerant from circuits using condensing unit and filling same in the cylinders for maintenance purpose if required.
7. To check / clean with CTC / tighten all electrical controls at least once in three months . The heated terminations , if required to be redone will be made in proper condition by using appropriate size crimping tool.
8. To check and replace, if necessary the performance of all operational safeties. This activity has to be done at least once in three months and if required earlier too.
9. To check and clean water strainers once in a month.
10. To check and clean AHU coils and filters, supply / return ducts / grills / diffusers, dehumidifier coils and filters, fresh air filters etc. as per requirement. Vaniclean or coil cleaning suitable chemical to be arranged by the contractor under the contract.
11. To tighten foundation bolts and adjust drive belt tensions as and when required.

12. To check and rectify rotary equipment alignment once in three months (by use of three dial gauges and to an accuracy of 0.05 mm both on the axial and radial readings).
13. To check / grease / replace bearings in all rotating machinery.
14. To attend to repairs of mechanical equipments such as compressors, pump sets, AHU blowers, motor drives, including minor and major overhauling.
15. To lubricate motor / pumps bearings as and when necessary. Electric motor winding varnishing to be done as per requirement.
16. To check electrical circuits and rectify the same as and when necessary. To clean, tighten electrical contact points at least once in three months. To replace electrical contacts and other items in the MCC's as and when necessary.
17. To tighten all the fasteners of the bus - bars as and when necessary and not less than once in three months. Also re-termination of the heated up contacts and replace cabling / wiring as and when necessary.
18. To descale condensers, evaporators, cooling coils and valves as per requirement. Descaling chemical ( i.e. Scale-2 etc.) for same is in the scope of this contract.
19. To check and top up / replace oil of the compressor crank case .
20. To operate and maintain the phase-I softening plant as and when required to maintain a Calcium Carbonate Hardness level of 50 to 70 in the cooling tower basin. In the process the softener has to be regenerated by back washing, brine injection and rinsing to achieve a water output of hardness level below 5 ppm.
21. To ensure adequate water level in the water tanks.
22. To clean / flush cooling tower sump and the basin as and when required.
23. To clean / flush expansion tanks as and when required, at least once in three months.
24. To check/ replace the heaters in the AHU's ducts and the dehumidifier.
25. To check the desiccant level in the dehumidifier. To top up the same and replace the same, if necessary.
26. To properly clean all machinery daily.
27. To paint the piping, supports, hangers and equipment as and when required.
28. To plug the leakages in the FRP basin of the cooling tower.
29. To replace the axial fan blade assembly / motor of the cooling towers. In the process the blade angles have to be finely adjusted, using four inch precision level.
30. To operate the air washers as per requirement. To service the same as per requirement.
31. To service ~160 nos. of geysers as per required. The geysers have to be cleaned off the scales by acid and alkali wash and finally rinsed in plain water. The replacement of the heaters and the thermostats of the geysers as per the requirement.

32. To arrange for a well- equipped first - aid box and maintain it in a healthy condition to take care of all first aid eventualities.
33. To maintain temperature and humidity as designated in the design for the different areas. It may be here mentioned that maintenance of low humidity levels of a maximum of 28% +\_5% is extremely critical for the Ion Source Room.
34. To clean and rectify / replace the automatic power factor correction panel capacitors for their proper functioning.
35. To manually fill RO water into the water tank of the Target lab, Magnet lab, HCI Lab, Linac Dev Lab Closed loop cooling systems.
36. To service the closed loop cooling systems of the Target laboratory, Magnet lab, HCI Lab, Linac Dev Lab. as and when required.
37. To attend to leakages in the MS piping by suitable welding etc., including attending to leakages from the flanges.
38. To attend and maintain canteen exhaust system including blower, duct, filters and electrical panels etc.
39. To Check, operate and maintain Fire Hydrant System i.e. water pumps, electric motor, D.G.Set, wet risers, hose reel, fire hose boxes etc. in IUAC Campus, so as to keep the same in the healthy condition. Please note that periodic / breakdown maintenance of D.G.Set will be done under AMC by OEM.
40. To Check, operate and maintain compressed Air System including 5 nos of air compressors, air dryers, filters, solenoid valves, ball valves, auto / manual drain valves, storage tanks, S.S. Piping, PU tubing, electrical panels etc. **(Please note that periodic / breakdown maintenance of Air dryers and Compressors will be done under AMC by OEM.)** However any minor repair / problem shall be attended by the O&M manpower.
41. To clean the air filters and the inter-cooler coils with compressed air
42. To take daily log book reading of the compressed air system.
43. To provide air connections to different pneumatic equipments in labs as per requirement.
44. To check the compressed air piping for leak and rectify the same as required.
45. To replace the air filters as per requirement.
46. To supervise the loading of empty high pressure gas cylinders / unloading of filled gas cylinders, issue of the necessary gate pass and receiving of the challan of filled cylinders. However loading / unloading shall be done by the gas supplier.
47. To attend to gas cylinder leakage if any and rectify the same.
48. To fix gas regulator, fitting, tubing on gas cylinder and provide gas connection as per requirement.
49. To assist in the lift operation / rescue operation in case some one is trapped inside lift due to power failure / mal functioning. Please note that periodic / breakdown maintenance of the lift will be done under AMC by OEM.

50. To check, operate and maintain hydraulic hand pallet truck, LN2 trolleys, material handling cranes etc. as per requirements. **Please note that periodic / breakdown maintenance of Material Handling Cranes will be done under AMC by OEM.** However any minor repair / problem shall be attended by the O&M manpower.
51. For the above scope of work IUAC will provide only the following free of charges to the contractor :
- (A) Free water and electricity for operation of the plant at nearest available point.
  - (B) All spares required to maintain the plant and only the ones that are going permanently into the installation. Compressor oil & refrigerant gas will be supplied by IUAC.
  - (C) IUAC will pay additional charges for machining jobs, condenser / chiller / coil repairs, motor burn outs as per requirement.
  - (D) IUAC will arrange for all electrical components required for maintenance of the plant.
  - (E) In certain circumstances the contractor may be asked to procure spare parts not covered within the scope. In such cases, IUAC will pay actual charges on production of original bill + 10 % handling charges.
52. Bidders are informed that the 2 x 200 TR Trane chilling units are under Schedule Preventive Inspection Service Contract with M/s Trane India Ltd. Limited. Also 2x250 TR TR Trane chilling units ( expected to be installed soon) will be under Schedule Preventive Inspection Service Contract with M/s Trane India Ltd. Limited.
53. To provide assistance using the site manpower for any other office work as per requirement.

**DETAILS OF EQUIPMENT COVERED UNDER THE SCOPE OF WORK**

S.N.	Item Description	Qty.
	<b><u>HVAC System</u></b>	
1	200 TR Screw Chilling Unit, Trane - Make, Model-CRTHD including the condenser, chiller, associated valves, controls, refrigerant and water piping, compressor motor etc.	2
2	250 TR Screw Chilling Unit, Trane - Make, Model-CRTHD including the condenser, chiller, associated valves, controls, refrigerant and water piping, compressor motor etc. <b>( Expected to be installed soon)</b>	2
3	Condenser Water Pumps ( make - Beacon - Weir , 1450 rpm, Q = 90 CMH, H = 25 meter, Model - 125-100-315 with NGEF motor (1450 rpm, 15 HP, 20.6 Amps)	5
4	Condenser Water Pumps, Q = 225 CMH, H = 25 meter with motor. <b>(Expected to be installed soon. This will replace the item-3.)</b>	5
5	Chilled Water Pumps, Make – Crompton Greaves, Model-CZ-100/400, 1480 rpm, Q-125 CMH, H-45 MWC, Motor ( 1480 rpm, 40 HP, 54A)	3
6	Chilled Water Pumps, make - Beacon – Weir, 1450 rpm, Q = 60 CMH, H = 40 meter, model 125-150-315, with NGEF motor ( 1450 rpm , 15 HP, 20.6 Amps )	2
7	Chilled Water Pumps, Q = 150 CMH, H = 45 meter with motor. <b>(Expected to be installed soon. This will replace the item-6.)</b>	2
8.	Booster Pumps, make - Beacon Weir, 3000 rpm, Q = 37.5 CMH, H = 95 MWC, with NGEF motor ( 3000 rpm, 30 HP, 39 Amps )	2
9.	Booster Pump, make - Beacon Weir, 1450 rpm, Q=572 US gpm, H = 44 MWC, model -BWP - 100 X400, with 12.5 HP motor, 1450 rpm.	2
10	250 TR Cooling Towers, induced draft of FRP construction, DBR - make	2
11.	300 TR Cooling Towers. <b>(Expected to be installed soon. )</b>	2
12.	Water Softening Plant ( make - WATCON ), to bring down the Calcium Carbonate hardness level of the tube well water down to 3 ppm. The softener plant is of 1450 liters capacity.	1
13.	Air Handling Units- upto 20000 cfm, with motor, up to 20 HP, 1440 rpm.	20
14.	Clean room 10000 class serving AMS lab including Air Handling Unit- 6000cfm, 2nos - 3 TR each condensing units, HEPA filters etc.	1 lot
15.	Bh-III, Clean room Class-10000 including AHU, ducting, HEPA filters, electrical, piping etc.	1 lot
16.	Clean room 1000 class, Room No. 240 including Air Blower 2000 cfm, HEPA filters etc.	1 lot
17.	MVB - 45 DE Bry - Air make Dehumidifier with Process air cfm of 4500 , process air blower and motor 7.5 HP , Reactivation air blower and motor 2 HP and Bed Drive motor 1 HP and having 9 heater banks each of 10 KW capacity, with complete bed carousel having 24 compartments filled with silica gel and rotating on roller bearings being driven through gear drive and bed drive motor.	1
18.	Insulated expansion tank located on EL. 262 meters	1
19	Insulated expansion tank located on El . 270 meters	1
20	Associated duct and piping, valves ( B/F, balancing ) with the above system	Lot
21	Associated Electrical panels with the above system	Lot



22.	Target / Magnet Lab /HCA Closed loop Cooling system with Water coolers, pump & piping	3
23.	All associated instrumentation with the above systems.	lot
24.	Air washer of 8000 cfm along with all accessories like control panel, water pumps, ducting etc. and installed in the dining hall roof and serving to the dining hall.	Lot
25.	Split air conditioners upto 3.5 TR at different locations	15
26.	Window air conditioners upto 1.5 TR, Make-Amtrex /Blue Star, National /others installed on different locations.	65
27.	Duct able splits / Package with out door units upto 11 TR each	13
28.	Desert coolers ( local make )-20 " located at various locations on the Gnd and 1 <sup>st</sup> floor.	50
29.	Water coolers upto 150 litre capacity, Blue Star/Voltas/Usha- make	20
30.	RO drinking water purifiers 15 - 50 lpm capacity.	18
31.	Fan Coil Units of 2.0 TR capacity	2
32.	Tube Axial Flow fans of 24500 CFM capacity	2
33.	Geysers 25 litre capacity, 2 kW, Racold / Spherehot/Remson - Make Located in Guest House, hostel, housing etc.	160
34.	Deep Freezer - Blue Star Make	1
35.	Canteen exhaust system including blower, duct, filters and electrical panels etc	Lot
	<b><u>Fire Hydrant System</u></b>	
36.	Fire hydrant pumps, upto 70 m WC,	5 nos
37.	Diesel Generator Set, 58kW, 1500 rpm	1 nos
38.	Wet riser System.	8 nos
39.	Fire Hose Box	8 nos
40.	Instrumentation, Electric Panel for fire hydrant system	lot
41.	Any other equipment connected with the above system	Lot
	<b><u>Material Handling System</u></b>	
42.	Hydraulic Hand Operated Pallet Trucks, hydraulic presses upto 5 tons Capacity	5 nos.
43.	LN2 Manual Trolleys	5 nos.
44.	Material Handling Cranes i.e. EOT, electric hoist upto 7.5 Ton capacity.	15 no
45.	<b><u>Compressed air system</u></b> including 3 nos of Screw type Air compressors ( capacity of 162 CMH @ 10 bar), 4 nos of Air dryers (162 CMH @ 10 bar refrigerated type), filters, storage tanks, valves, piping, fittings etc.	1 Lot
46.	Any addition of equipments /system can be made by IUAC in the scope of work during the contract period and same has to be taken under O&M by the contractor without any extra cost if it does not involve additional manpower / resources.	

**RESPONSE TIME / TIME SCHEDULE FOR ATTENDING OF PROBLEMS**

<b>S.N.</b>	<b>Item Description</b>	<b>Time</b>
1	Main Chilling Unit Reciprocating type	
1.1	Minor defects Mechanical and Electrical	Same day
1.2	Major Electrical parts, starter, SFU and control circuit etc.	1 -2 days
2.	Compressor Breakdown	
2.1	Changing reeds	Same day
2.2	Replacement of shaft seal	One day
2.3	Leakage testing, rectification of the same, vaccumising, gas charging and putting back into operation.	Three days
2.4	If compressor has to be opened due to any fault, putting the same back into operation.	Seven days
2.5	Changing of main compressor motor, realignment, coupling etc.	Four days
2.6	Replacement of lubrication oil	Same day
2.7	Changing of main bearing bushes	Same day
2.8	Check up of end - play and rectification of the same	Same day
3.	<b>Pumps</b>	
3.1	Changing of pump glands	Same day
3.2	Changing of suction strainers	Same day
3.3	Changing of coupling	Same day
3.4	Re- alignment	Same day
3.5	Changing of bearings of pumps / motors	One day
3.6	Changing of motor	Same day
3.7	Remetallizing of shaft, sleeve etc.	Four days
4.	<b>Air Handling Units</b>	
4.1	Changing of bearings	One day
4.2	Replacement of V-belts	Same day
4.3	Cleaning of filters, pressure & Vaniclen cleaning of the coils	Same day
4.4	Cleaning of fresh air filters	Same day
4.5	Changing of blowers	Same day
4.6	Remetallizing of shaft etc.	Three days
4.7	Repair of cooling coil etc.	Three days
5.	<b>Cooling Towers</b>	
5.1	Changing of bearings , fan blades, motor etc.	Two days
5.2	Cleaning of sump etc.	Same day
5.3	Changing of tower nozzles	Same day
5.4	Re-adjustment of fills / drift eliminators	Same day

5.5	Adjustment of fan blade angle	Same day
5.6	Weather protection of the motor terminals	Same day
6.	<b>Dehumidifier</b>	
6.1	Changing of heater	Same day
6.2	Changing of desiccant	Same day
6.3	Attending to minor problems	Same day
6.4	Rectification of push block assembly	Two days
6.5	Replacement of bed drive springs	Two hours
6.6	Replacement of filters	Three hours
6.7	Change of gear box oil	Six hours
6.8	Attending to major problem	Three days
7.	<b>Electrical</b>	
7.1	Servicing of contactor points	Three hours
7.2	Electrical fault	Three hours
7.3	Servicing of MCC's	Seven hours
7.4	Motor rewinding	Four days
8.	<b>Air Washers</b>	
8.1	Changing of V-belts	Same day
8.2	Cleaning of filters and sump	Same day
8.3	Attending to electrical fault	Same day
8.4	Attending to bearing change	Same day
8.5	Servicing of pumps	Same day
9.	<b>Cooling Equipments ( WAC/Split/Package Units/Water Coolers )</b>	
9.1	Attending to electrical fault	Same day
9.2	Attending to service	Same day
9.3	Attending to major defects like compressor burn-out	Three days
10.	<b>Geysers</b>	
10.1	Attending to minor problem	Same day
10.2	Geyser capital servicing.	Same day
11	Overhauling of Split / Window/duct able Air Conditioners	Two days

**LIST OF BUILDINGS COVERED IN THE SCOPE OF WORK**

1. Utility building-I
2. Lab Complex ( Ground Floor, 1<sup>st</sup> Floor, 2<sup>nd</sup> Floor )
3. Beam Hall-I
4. Beam Hall-III ( UG, Gnd Floor, 1<sup>st</sup> floor )
5. Accelerator Tower
6. Ion Source Room
7. New Guest House
8. IUAC Housing Complex
9. Flatlet-I & II
10. Hostels
11. Auditorium
12. Pelletron UPS Room
13. AMS Lab
14. Fire Pump Room

ANNEXURE - VI

LIST OF TOOLS, EQUIPMENTS, MEASURING INSTRUMENTS

1. Ring Spanner (6-32 mm)	1 Set of 12
2. Ring Spanner (1/4" - 1 1/4" inch)	1 Set of 12
3. Box Spanner (6 - 36 mm)	1 Set of 19
4. Box Spanner (1/4" - 1 1/4")	1 Set of 19
5. Double open end Spanners (6-36 mm)	1 Set of 12
6. Double open end Spanners (1/4"-1 1/4")	1 Set of 12
7. Screw Driver Set (6" to 12")	1 Set of 6
8. Screw Driver (18")	1 No.
9. Adjustable Wrench (6", 12")	1 each
10. Pipe Wrench (12", 18")	1 each
11. Measuring tape (3m, 15m)	1 each
12. Allen key set (1.5 - 16 mm)	1 lot
13. Allen key set (1/16"-1/2")	1 lot
14. Psychrometer	2 Nos.
15. Digital Thermometer	1 No.
16. Cutting Plier (8")	1 No.
17. Hand Hammer 1kg	1 No.
18. Hand Hammer 500 Grams	1 No.
19. Mallet Hammer 500 Grams	1 No.
20. Hack Saw	2 No.
21. Multi Meter/Tong tester (standard make)	1 Nos.
22. Test Lamp	1 Nos.
23. R-22 double manifold with suction and discharge gauges	1 No.
24. Suction gauge (30 In Hg to 250 psi)	1 No.
25. Gas charging line	1 No.
26. Copper tube cutter	1 No.
27. Dial Indicator (0.01-10 mm), 2" Dia, Mitutoyo -Make	2 Nos.
28. Flaring tool set	1 No.
29. Swaging tool	1 set
30. Bearing puller	1 No.
31. Pulley puller	1 No.
32. Electric blower for cleaning	1 No.
33. Line Tester	2 Nos.
34. File (round, flat, half circle, triangle)	1 each
35. Chisel	1 No.
36. Electrical sleeve insulated Screw driver set	1 Lot
37. Electrical Wire Cutter	1 No.
38. Chargeable Torch	1 Nos.
39. Umbrella/ rain coat	2 Nos.
40. Brazing set including torch	1 set
41. De-scaling pump, Plastic tub, PVC pipe rods, brushes etc. basis)	1 lot (On need
42. Refrigerant empty cylinders basis)	1 lot (On need
43. Vacuum pump basis)	1 No.(On need
44. Condensing unit basis)	1 No. (On need

45. Any other tools/fixtures/Equipment as per requirement 1 Lot

CONSUMABLES

1. Insulation tape (R, Y, B, Black) - 5 each (stock all the time)
2. Teflon tape - 10 Nos ( stock all the time)
3. HSS Hacksaw blades - 10 Nos ( stock all the time)
4. M-Seal - 10 Nos, 100 gms
5. Cotton dhoti - 20 nos. ( stock all the time)
6. CRC - 2 bottles ( 500 ml each)
7. Emery paper (rough, fine) - 6 each
8. Al. adhesive tape (4") - 4 Nos.
9. Petrol/Diesel for cleaning - 2 Lt. ( stock all the time)
10. Vaniclean - On demand (~50 litre) Cleaning of Copper Coils of AHU's, Split AC, WAC.
11. De-scaling Chemical (Scale-2) - On demand (~ 100 litre / each de- scaling of chillers evaporator / condensor)
12. Attendance Register -1 No.
13. Maintenance/Stock Register - 1 No.
14. Any other consumables, as per requirement - 1 Lot

**PRICE BID / BOQ (PART – B)****SCHEDULE OF PRICES FOR OPERATION & MAINTENANCE  
(TO BE FILLED BY BIDDERS)**

<b>S. No.</b>	<b>Item Details</b>	<b>unit</b>	<b>Total Monthly Amount ( Rs)</b>
1	<b>Total Monthly Minimum Wages</b> for Round the Clock Operation and Maintenance of HVAC Ph-I as per the minimum manpower given below: a) Technician Cum Supervisor – 1 No. b) R&A/C Mechanic – 1 No. c) Operators – 4 Nos. d) Helpers – 4 Nos.	Rs	159272
2	Charges towards EPF Amount (12%+1.00% Admn. charges) on item#1.	Rs	20705
3	Charges towards ESI Amount (4.75%) on item-1.	Rs	7565
4	Charges towards Consumables as per clause-10 of Annexure – I.	Rs	_____ (to be filled by Bidder)
5	Charges towards Tools & Tackles, Safety Shoes & Uniform etc., as per clause no.11, 12 &13 of Annexure – I.	Rs	_____ (to be filled by Bidder)
6	Overhead and Profit	Rs	_____ (to be filled by Bidder)
7	<b>Total Monthly Amount</b> ( Rupees _____ )	Rs	_____ (to be filled by Bidder)
8	<b>Total Annual Amount</b> ( Rupees _____ )	Rs	_____ (to be filled by Bidder)

**Note:**

1. The wages considered in S.No.1 of the above table (Annexure-VIII) are based on the prevailing minimum wages fixed by the labour department, Govt. of Delhi applicable as on 01-11-2018. Bidder is required to fill the amount only at S.No. 4,5,6,7&8 in the above table.
2. If contractor wishes to pay more than the minimum wages to his manpower, he should take this into account in his overhead & profit component.
3. GST will be reimbursed to contractor as per Govt. norms after submission of documentary evidence of depositing the same.

( SIGNATURE ) :

( NAME ) :

( Seal ) :