

INSTITUTE FOR PLASMA RESEARCH
NEAR INDIRA BRIDGE, BHAT, GANDHINAGAR 382 428
GUJARAT STATE
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TENDER NOTICE DATED 8-2-2010

Itemwise sealed tenders are invited from reputed and eligible parties for the following.

Sr. No	Tender Notice No.	Item	Quantity	Due Date & time of opening	Tender Fee (Rs.)	EMD (Rs.)
1.	IPR/TN/PUR/036/09-10	High Voltage Insulating Mat conforming to IS 15652:2006	100 Mtrs.	8-3-2010 2.30 p.m.	200.00	10000.00
2.	IPR/TN/PUR/037/09-10	Supply, installation, testing and commissioning of floor mounted type 15 TR (7.5 TR x twin circuit) air cooled package air conditioning unit	2 Nos.	18-3-2010 2.30 p.m.	200.00	10000.00
3.	IPR/TN/PUR/038/09-10	Supply, installation, testing and commissioning of floor mounted type 10 TR (5 TR x twin circuit) air cooled package air conditioning unit	2 Nos.	18-3-2010 3.30 p.m.	200.00	10000.00

Tender documents are available on IPR Website : www.ipr.res.in/purchasetenders.html. Tenderers meeting the eligibility criteria mentioned in the tender documents may, at their option, download the tender documents from the website and submit their offer along with prescribed **Tender Fee (non refundable) and EMD** in the form of Demand Draft from any nationalized/scheduled bank drawn in favour of **Institute for Plasma Research** and payable at **Ahmedabad** as per the details given in the tender documents. In case party desires to collect the tender documents by post, they may contact the Purchase Officer along with prescribed tender fee. Tender documents will be issued upto **26-2-2010**. Representative who is going to attend the tender opening should carry an authorization letter from the organization for participation in the tender opening failing which he will not be allowed to attend the tender opening.

TENDER NOTICE No.IPR/TN/PUR/038/09-10 DATED 8-2-2010

For Supply, installation, testing and commissioning of floor mounted type 10 TR (5 TR x twin circuit) air cooled package air conditioning unit as per the SOQ given in the tender documents – 2 Nos.

NOTE:

1. Full details and specifications of the items and general instructions to be followed regarding submission of tenders are indicated in the tender documents.
2. **Proof for fulfillment of eligibility criteria mentioned hereunder should be submitted along with the tender. If the tender is submitted without valid documents, we shall not consider your offer. Tenders received without proof of eligibility criteria will be rejected.**
3. Tender documents can also be obtained by submitting a written request to the Purchase Officer together with prescribed tender fee, provided that the eligibility criteria is fulfilled. Last date for issue of Tender documents is 26-2-2010.
4. While requesting for Tender Documents, such request shall indicate the **“REQUEST FOR TENDER DOCUMENTS AGAINST TENDER NOTICE NO.IPR/TN/PUR/038/09-10 DATED 8-2-2010”**.
5. The tender fee of Rs.200/- (non refundable) should be made in the form of **DEMAND DRAFT from any nationalized/scheduled bank drawn in favour of Institute for Plasma Research and payable at Ahmedabad.** Vendor's name and tender number shall be indicated on the reverse side of the Demand Draft.
6. **DD should not be prior dated to the date of advertisement. Separate request letter and separate Demand Draft shall be sent for each tender.**
7. Those who use the downloaded tender documents from IPR Website may submit the prescribed Tender Fee keeping in a separate envelope along with the tender.
8. **Tenders received without the prescribed tender fee will be rejected.**
9. No request for the extension of due date will be considered.
10. Late/Delayed offers will not be accepted.
11. Tenders in a sealed envelope superscribing the envelope with the above tender no., date, due date and brief description of tendered item along with EMD for Rs.10,000/- by way of Demand Draft from a nationalized/scheduled bank drawn in favour of **Institute for Plasma Research** and payable at **Ahmedabad** should be submitted to the *Purchase Officer* at the above address by 1.00 p.m. on **18th March, 2010.** Tenders received upto 1.00 p.m. on 18-3-2010

- will be opened on the same day at 3.30 p.m. in the presence of attending tenderers.**
12. In the event of any date indicated above is a declared Holiday, the next working day shall become operative for the respective purpose mentioned herein.
 13. IPR will not be responsible for any delay/loss of documents in transit.
 14. Tenders received without the details asked for including proof of eligibility for participating in the tender may not be considered.
 15. Tenderers should furnish/enclose full technical details/literature, delivery period and confirm the terms and conditions attached with the tender.
 16. **Those who do not meet with the eligibility criteria need not submit Tender.**
 17. **Those who are quoting on behalf of their foreign Principals should submit a Proforma Invoice of Foreign Principals in foreign currency.**
 18. The Director, IPR reserves the right to accept or reject any offer in full or part thereof without assigning any reason thereof.
 19. **Quotations received without EMD will not be considered.**
 20. **The representative who is going to attend the tender opening should carry an authorization letter from the organization for participation in the tender opening failing which he will not be allowed to participate in the tender opening.**

ELIGIBILITY CRITERIA: (i) The vendor should be either manufacturer OR their authorized service provider for Package Air conditioners of Approved make (in case of authorized service provider, attach valid certificate) (ii) The vendor should have service facility available for Packaged air conditioners in Ahmedabad / Gandhinagar and (iii) vendor should have on hand or executed work with a single order value of not less than Rs.6 lakhs in last 3 years for Design, Supply, Installation, Testing & Commissioning of Packaged AC with ducting work

NOTE: Issue of tender documents does not mean that a vendor is qualified to submit tenders. IPR's decision to consider as to whether a vendor has met with the eligibility criteria is final.

INSTRUCTIONS TO BIDDERS AND TERMS AND CONDITIONS

1. The quotation and any order resulting from this tender/enquiry shall be governed by our Conditions of contract and supplier quoting this tender shall be deemed to have read and understood the same in toto.
2. Where counter terms and conditions have been offered by the supplier, the same shall not be deemed to have been accepted by us, unless our specific written acceptance thereof is obtained.
3. **Tender Fee: Tenders received without the prescribed Tender Fee will be rejected.**

4. **Clarifications:** Any technical and commercial questions, information, clarifications, etc. that may be required pertaining to this Tender/enquiry may be obtained from the Purchaser before submitting the tender.
- 4.1 Bids shall be complete in all respects and shall include properly filled in prices, other specifications, schedules, relevant drawings and catalogues as necessary alongwith the bid covering letter, all in duplicate.
5. **Quotation:** Your quotation superscribing our tender/enquiry No., date, due date and short description of item should be submitted to the Purchase Officer, IPR in a sealed envelope on or before the due date. Late and delayed quotations will not be considered. IPR will not be responsible for postal delays or any other delays in receipt of quotation. Envelopes received without Tender number, date, due date and short description of item may be rejected. The quoted prices should be firm for a period of 120 days from due date for placing order. IPR is not bound to accept lowest rate/s. IPR reserves the right to place order on one or more parties irrespective of whether he is lowest or not. The scope of supply includes insurance by the Contractor/Supplier.
6. **Specifications:** Material should be offered strictly conforming to our specifications/drawings. Deviation, if any, should be clearly indicated by the supplier in their quotation. The supplier should also indicate the Make/Type number of the materials offered and catalogues, technical literature and samples, wherever necessary should accompany the quotation.
7. **Terms of prices:** Quotation should be submitted on door delivery basis without extra charge wherever possible. For quotations on Ex-Works, Ex-godown basis the approximate packing and forwarding charges should be indicated by the supplier. In the case of local suppliers, the material is to be delivered at our stores free of charge. Unit rate/s should be valid throughout the validity of purchase order/contract period for addition/deletion purposes. Break-up of price should be furnished. The quoted price should not be subject to price escalation for whatsoever reasons. The quoted price shall be firm, fixed and non-revisable during the validity/extended validity of purchase order/contract.
- 7.1 Prices are required to be quoted according to the units indicated in the tender form. When quotations are given in terms of units other than those specified in the tender form, relationship between the two sets of units must be furnished.
- 7.2 Wherever options are specified in the tender documents, IPR reserves the right to accept any option/s irrespective of whether all the vendors have quoted for all the options or not. The decision of IPR in this regard will be final.
8. Tender should be free from Correction and Erasures. Corrections, if any, must be attested. All amounts shall be indicated both in words as well as in figures. Where there is difference between amounts quoted in words and figures, amount quoted in words shall prevail.
9. IPR shall be under no obligation to accept the lowest or any tender and reserves the right of acceptance of the whole or any part of the tender or portion of the quantity offered and the tenderers shall supply the same at the rates quoted.

10. **Sales Tax etc.:** We have no "C" or "D" form. The percentage of Sales Tax/VAT, surcharge, if applicable, and other levies legally leviable and intended to be claimed should be clearly indicated in the tender. Where this is not done, no claim on these accounts would be admissible later.
- 10.1 **VAT Registration:** You may submit a copy of VAT Registration certificate along with your quotation (if applicable).
- 10.2. **Service Tax:** Wherever Service tax is applicable, it should be mentioned clearly. You may indicate percentage of Service Tax in your quotation.
- 10.3 **Excise Duty:** As per Notification No.10/97-CE (Central Excise) dated 1-3-1997, the Purchaser is entitled for availing Excise Duty exemption at present. Excise Duty Exemption Certificate, wherever applicable, and as per rules will be issued at the appropriate time. Hence Excise Duty should not be included in the BID. However, prevailing percentage of Excise Duty may be indicated.
- 10.4 **Octroi:** Octroi is not applicable in our case.
11. **Delivery & completion date:** The supplier must indicate the firm delivery date by which the materials will be despatched/delivered by them from the date of our order.
12. **Inspection:** Materials on its arrival at IPR will be inspected by Stores In-charge, and his decision in the matter will be final.
13. **Earnest Money Deposit (EMD):** Tenderer should furnish EMD for Rs.10,000/- (Rupees Ten thousand only) by way of Demand Draft from a nationalized/scheduled bank drawn in favour of *Institute for Plasma Research* and payable at *Ahmedabad* should be submitted along with quotation. Tender received without EMD will not be accepted.
- 13.1 **EMD of unsuccessful Bidder will be returned after finalizing the Contract/placing Purchase order.**
- 13.2 **The EMD shall be forfeited in case the selected Bidder does not start the work within the time limit specified or fail to complete the work within the stipulated delivery period or fail to comply with any of the terms and conditions in the purchase order/contract.**
14. **Payment:** Within 30 days from the date of acceptance. Wherever, advance payment is involved, it will be paid only against Bank Guarantee from Nationalised/Scheduled Bank.
15. No correspondence will be entertained within 30 days from the date of receipt of material and bills, whichever is later.
16. Quotation should be valid at least for 120 days from the date of opening of the tender.
17. Delivery periods be clearly indicated against each item separately.
18. **Guarantee:** The Stores/material/goods/equipment offered by the bidder should be guaranteed for a minimum period of twelve months, against defective materials, design, workmanship, operation or manufacture. For defects noticed during the Guarantee period, replacement/ rectification should be arranged free of cost within a reasonable period of such notification. In cases where our specifications call for a guarantee period more than 12 months specifically, then such a period shall apply.

19. **Security Deposit:** The successful Bidder will have to furnish to the Purchaser an interest free security deposit for 10% (Ten percent) of the order value in the form of Bank Guarantee of an equivalent amount from a nationalised/scheduled Bank within 15 days from the date of LOI/Purchase order and the said Guarantee should be valid till the goods are accepted by IPR. The Security deposit shall be forfeited in case the selected Bidder does not start the work within the time limit specified or fail to complete the work within the stipulated delivery period or fail to comply with any of the terms and conditions in the purchase order/contract.
20. **Liquidated Damages:** In addition to forfeiting Security Deposit, Liquidated Damages for the delay shall be 1/2% (half percent) of the total order value for the delay of each week in the scheduled time of supply or the scheduled date of final completion for the work as the case may be, subject to a maximum of 5% (five percent) of total order value. Liquidated Damages will be recovered from the payment due to the supplier.
21. **Performance Bank Guarantee:** The Contractor/Supplier will have to furnish to the Purchaser (IPR) an interest free performance bank guarantee for 10% (Ten percent) of the order value/ contract value by Demand Draft or by way of providing a Bank Guarantee from a Nationalised/Scheduled Bank valid for a period of 12 months/guarantee period mentioned in the order from the date of installation/acceptance for satisfactory performance of the work carried out by the Contractor.
22. The Contractor/Supplier shall at all times indemnify the purchaser against all claims which may be made in respect of the stores/material/goods/equipment for infringement of any right protected by Patent Registration of design or Trade Mark and shall take all risk of accidents or damage, which may cause failure of supply from whatever cause arising and the entire responsibility for sufficiency of all means used by him for the fulfillment of the contract.
23. **BAR/PERT Charts:**
To be provided as per the requirement of Purchaser.
24. **Sub-Contract:** All sub-contractors are required to be appraised and approved by the Purchaser before placement of orders by the Vendor.
25. **Jurisdiction:** The contract/Purchase order shall be governed by the Laws of India for the time being in force. The Courts of Ahmedabad only shall have jurisdiction to deal with and decide any legal or dispute arising out of this contract.
26. **Settlement of disputes:** Any disputes or difference arising out of or in connection with the Contract/Purchase order shall be to the extent possible settled amicably between the parties.

If amicable settlement cannot be reached then all disputed issues shall be settled by arbitration.
27. **Arbitration:** In the event of any dispute or difference arising under this Contract, the matter shall be referred to the Arbitrators one each nominated by the Purchaser and Contractor from their respective organisations. In case the said Arbitrators are not able to settle the dispute by themselves, the matter shall be referred to the Arbitrator mutually nominated by the Purchaser and the Contractor and whose decision will be final and binding on both the parties. The venue of arbitration will be IPR.

Subject to as aforesaid the Arbitration Act, 1940 and the rules thereunder and any statutory modification thereof for the time being in force shall be deemed to apply to the Arbitration proceedings under this Contract.

28. **Permits and Licences:** The Contractor shall secure and pay for all permits and licence which he may require to comply with in respect of all laws, ordinances and regulations of the Government or Public Authorities in connection with the performance of his obligations under the Contract. The successful contractor shall be responsible for all damages and shall indemnify and save the Purchaser harmless from and against all claims for damages and liability which may arise due to his failure to comply with what is stated above.
29. **Training:** The successful tenderer shall, if required by the Purchaser, provide facilities for the practical training of Purchaser's engineering or technical personnel for their active association on the manufacturing process throughout the manufacturing period of the Contract/stores, number of such personnel to be mutually agreed upon.
30. **Operation/Instruction Manual:** Where operation/instruction manual is essential to enable the Purchaser to put the stores to proper use, the successful tenderer shall furnish such operation/instruction manual along with the stores.
31. **Test Certificate:** Wherever required, test certificates should be sent along with the despatch documents.
32. **Secrecy:**
 - 32.1 All information, drawings, designs and specifications imparted to the bidder/successful contractor shall, at all times, remain the absolute property of the Purchaser, the bidder/successful contractor shall not use them for purposes other than for which they are provided for and shall treat all these documents as confidential. These shall not be reproduced in whole or in part for any other purpose.
 - 32.2 The contractor shall use his best endeavours to ensure that such information are not divulged to third parties except where needed for the performance of the contract by the successful bidder with the prior consent of the Purchaser. In such cases, the successful contractor shall ensure and obtain similar obligation of confidence, from third parties in question.
33. **Indemnity:** The Contractor shall warrant and be deemed to have warranted that all stores supplied against this contract are free and clean of infringement of any Patent, copy right or trade mark and shall at all times indemnify the Purchaser against all claims which may be made in respect of the stores for infringement of any right protected by patent. Registration of design or Trade Mark and shall all risk of accidents of damage which may cause a failure of the supply from whatever cause arising and the entire responsibility for the sufficiency of all the means used by him for the fulfilment of the contract.
34. **Counter terms and conditions of Suppliers:** Where counter terms and conditions printed or cyclostyled conditions have been offered by the supplier, the same shall not be deemed to have been accepted by the Purchaser unless specific written acceptance

thereof is obtained.

35. **Installation/commissioning/site works:** Wherever these activities are part of scope of work/specifications, Vendor should carry out the same without any extra cost to IPR.
36. **Free Issue Material (FIM) (If specified in the tender documents):** Successful tenderer will have to furnish in the form a Bank Guarantee or in any other form as called for by the Purchaser towards adequate security for the materials/property provided/issued by the Purchaser as Free Issue Material (FIM) for the due execution of the contract. Successful bidder shall submit Bank Guarantee from a nationalized bank and arrange insurance for the cost of FIM at his expenses.
37. Late/delayed tenders will not be accepted. Incomplete tenders may be rejected at the discretion of IPR.
38. **IPR is not bound to accept the lowest tender. IPR reserves the right to select any vendor at its sole discretion.**
39. **Result of the tenders:** Unsuccessful tenderers will not be informed of the result of their tenders.
40. The Director, IPR reserves the right to accept or reject any quotation/tenders fully or partly without assigning any reason.
41. IPR reserves the right to place order on a single party or to split the order at its sole discretion.

We agree to the above terms and conditions.

Place:

Signature of Bidder with seal

Date:

Note: A copy of our terms and conditions duly signed should accompany your quotation.

**TENDER NOTICE NO. IPR/TN/PUR/038/09-10 DATED
08/02/2010**

PACKAGED AIR CONDITIONING SYSTEM

FOR

**SEMINAR HALL AT FCIPT NEW BUILDING, GIDC,
GANDHINAGAR**

SCOPE OF WORK:

**DESIGN, SUPPLY, INSTALLATION, TESTING AND
COMMISSIONING OF PACKAGED AC UNITS WITH
DUCTING WORK**

(Please note that the bidder should sign on all pages)

DESIGN, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF PACKAGED AC UNITS WITH DUCTING WORK

1. SCOPE OF WORK:

PACKAGED TYPE AIR-CONDITIONING UNITS: The scope includes the supply, installation, testing and commissioning of 2 nos. 10 TR Packaged Air conditioners with all required accessories, capable of performing cooling, dehumidifying, air circulating & filtering.

- The 2 Nos. of 10 TR capacity each, Package Air conditioners need to be installed at **FCIPT New Building, GIDC, Gandhinagar** as per the instructions of Engineer-In charge. Accordingly, the Package air conditioners have to be delivered.
- The scope also includes the supply & fixing of suitable MS Stands (mountings for outdoor units), installation of above units with all necessary civil works, copper piping, drain piping, painting of copper tube, electrical cabling, Ducts with all required accessories with insulation etc. required to complete the overall work.
- The Packaged units shall conform to latest applicable Indian standards and shall also comply with all applicable statutory regulations and safety codes in the premises where the equipment shall be installed.
- The Packaged unit shall consist of **Scroll compressor** (Hermetic / Semi Hermetic / Sealed), Direct Expansion coil, Air cooled Condenser, Refrigerant Piping, Wiring controls and cut-out, Belt driven motor DIDW forward curved centrifugal fan compactly packaged and mounted in a cabinet (without plenum) and structure for mounting remote Air-cooled Condenser. The Packaged unit shall rest on floor, isolated from the floor by means of vibration isolation pads. The Air-cooled Condenser shall be mounted on suitable supporting structure.

Notes:

1. **The vendor is requested to visit the site with prior appointment (Monday to Saturday between 10.00 am and 4.00 pm) to see the location and space provided for installation and confirm the same with engineer In-charge before bidding. You may contact Mr.Prashant Singh (Phone: 23962184 / Email: prashant@ipr.res.in) or Mr.Sudhir Kumar Sharma (Phone: 2396 2229/2230 / Email: sks@ipr.res.in) or Mr.Yagnesh Trivedi (Email: yagnesh@ipr.res.in), in this regard.**
2. After getting approval for work contractor need to submit all required drawings, documents and get the approval of Drawings from IPR engineer In-charge (Refer Sec. 7).
3. The required manpower for executing the works shall be arranged by the successful contractor.
4. The necessary tools, instruments, brazing equipments, nitrogen gas, etc required for carry out the installation, testing and commissioning works have to be arranged by the successful contractor.
5. If any damage occurs in equipments , materials etc. during transportation, shifting, installation, testing and commissioning then the contractor shall rectify or replace them at free of cost.

2. TECHNICAL SPECIFICATIONS

2.1 PACKAGED AC UNITS:

- **CABINET:** Cabinet shall be fabricated out of heavy gauge steel and properly formed for close fit and structure rigidity. All access panels shall be so constructed as to be quickly and easily removable. All outside surface shall be finished in backed enamel paint. Cabinet shall be fully insulated with a minimum of 25-mm resin bonded fiberglass.
- **COMPRESSOR:** Compressor shall be of the Hermetic (or) Semi Hermetic (or) Sealed type **Scroll Compressor** with suction and discharge valves, Gas cooled motor, Balance and mounted on vibration absorber to provide quiet, free floating operation. Compressor shall be protected against overload protection and single phasing protection.
- **CONTROL:** Unit shall be completely factory wired internally. Electrical characteristics of unit shall be 415 volts, 3 phases 50 Hz AC. Fan motor shall have same electrical characteristics as compressor. Compressor and fan motor shall be served by separated thermal and electrical overload protection. High-Low pressure-stat shall be provided to protect compressor against excessively high and too low pressure. Control voltage shall be 230 Volts. Control thermostat shall be located in unit return air stream. Control circuit shall be such that compressor cannot restart without manual resetting when it trips due to any reason other than thermostat tripping. Compressor shall be interlocked with fan so that it cannot start unless fan is on. The units should also equip with 2" diameter dial type pressure gauges for monitoring of suction and discharge pressure of each compressor.
- **FAN:** Fan impeller and housing shall be fabricated of heavy gauge steel. Fan impeller shall be DIDW forward curved, multi blade type, enclosed in housing and mounted on common shaft. All related parts shall be dynamically balance.
- **MOTOR & DRIVE:** Fan motor shall be squirrel gauge totally enclosed fan cooled type of adequate capacity suitable to operate on 3 Phase, 415±10 Volts, 50 Hz, and AC Supply. Fan motor shall be mounted on an adjustable vibration isolating base located inside the casing of the unit. Fan should be driven through standard V Belt/s.
- **COOLING COIL:** Cooling coil shall be of fins and tube type having aluminum fins firmly bonded to copper tube assembled in GI frame in minimum 3-row construction.
- **CONDENSER:** Fins tube type Air-cooled type condenser adequate surface area shall be offered.
- **FILTER:** Each unit shall be provided with a factory assembled filter section, housing adequate thick cleanable viscous metal type or mat fiber type air filter. Filter holding frame shall be design such that by-pass of air is avoided. This shall be done with heavy felt sealing strip.
- **ISOLATOR:** Each Packaged unit shall be provided with adequate number of vibration isolators.
- **FRESH AIR INTAKE:** Galvanized sheet steel air louvers with bird screen and damper shall be provided in the clean, opening of the unit room. Damper shall be opposed blade louvered type fabricated out of 16 G galvanized sheets steel.
- **REFRIGERANT PIPING:** Refrigerant piping shall be of heavy gauge Copper (or) IS-1239 heavy gauge seamless MS pipes complete with thermostatic expansion valves, liquid line strainer, and dehydrator, liquid line shut off valve, HP and LP cutouts. Laying of refrigerant pipes should be properly supported by MS/ GI heavy gauge tray/ channel. Painting shall be done on refrigerant copper piping with red and yellow colour for discharge and liquid line respectively.
- **CHARGE:** Initial charging of refrigerant & oil shall be supplied with the unit, within the same price till final commissioning and handing over system to FCIPT

- **PAINTING:** All the equipment including base frame shall be painted with two coats of the suitable paint of enamel color over a rust resistant primer.

2.2 DUCTING WORK:

The Duct fabrication and installation work shall conform to IS 665-1963

Rectangular Ducts shall be made of galvanized steel sheets shall conform to IS: 277 -1965.

The thickness of the sheets of the ducts shall be as given below:

Size of Duct in mm	Sheet Thickness (SWG)
1 to 750	24
751 to 1250	22
1251 to 1750	20

The contractor shall provide and neatly erect all sheet metal work as Directed by IPR Engineer In-Charge as may be required to carryout the intent of these specification and drawing.

All necessary allowances and provision shall be made by the contractor for beams, pipes or other obstructions in the hall whether or not the same on the drawing. Where necessary to avoid beams or other structural work or other pipes or conduits or cables, the ducts shall be transformed, divided or curved to one side the required area being maintained. All ducts may be fabricated at site (or) manufacture's place.

If a duct cannot be run as shown from drawing the contractor shall install the duct between the required points by any path available subject to the approval of the Engineer- in- charge of IPR.

All ducts shall be rigid and shall be adequately supported and braced where required with standing seams, tees or angles should be of ample size to keep the ducts true to shape and prevent buckling vibrations. All joints shall be airtight with 5 mm neoprene rubber gaskets in between the flanges. All nuts & bolts shall be zinc coated

Whatever the ducting passes through the wall / RCC structure, the space around should be property sealed and packed with suitable sleeves / civil / framework in such a fashion that no vibration from duct shall transmit to the structure.

Ducts shall be supported by means of painted MS rod or angles (minimum 12 mm dia rod) or angle suspenders hung from RCC slab or MS beam by means of expansion bolts or anchor fasteners (minimum 12 mm dia) or as per the instructions of Engineer-in-charge. The Duct shall be supported by clamp type arrangement in order to arrest the transverse movement. All MS rod or angle should be painted with one coat of red oxide and two coats of enamel paints. All work should be carried out in supervision and indication of IPR engineer in charge.

- **GRILLS / DIFFUSERS:** All Supply air grilles/ diffuser shall be made of Aluminum extruded section with double deflection type and shall be provided with M.S. volume control dampers. Return air grilles / diffusers shall be without VCD. Necessary wooden frames for mounting of grilles shall be provided by the contractor. The color of powder coating of diffusers shall be ivory white. The frame of the grilles shall be made of 16 SWG aluminum section.
- **DAMPERS:** All duct dampers shall be louvered type made out 18-gauge GI sheet with suitable links levers and brass bushes. Control and setting devices shall be made robust, easily operable and with an indicating device clearly showing the damper position at all times.
- **FIRE DAMPERS:** Fusible link type or motorized fire dampers and/ or fire & smoke damper (as applicable and as guided by IPR In-charge). Complying with all the applicable specifications of volume control dampers shall be provided at initial duct piece/s; whether or not shown on the drawing/ specified in tender. Fire dampers shall be approved by CBRI/ TAC. Fire damper shall

also comply with the relevant UL specifications including specified temperature/ time rating and sealing efficiency. Interlocking shall be provided between fire dampers and package units to stop the fan in case of operation of fire damper.

2.2.1 DUCT INSULATION: External thermal insulation on ducts shall be provided as follows:

- Duct surface shall be thoroughly cleaned and joints made air tight.
- Fix insulation of specified thickness to the surface of the duct tightly, taking care to seal all joints of the ducts.
- Apply vapor barrier (for non Exposed Duct 25 mm thick TF quality Thermocol covered with 42 G or suitable AI. Foil as decided by IPR engineer in-charge at the time of work and **for exposed Duct** 50 mm thick TF quality Thermocol covered with chicken wire mesh and 20 mm thick sand cement plaster)
- For supply air and return air duct: TF quality Thermocol or equivalent with suitable thickness. The insulation shall be applied as follows:
 - i) Apply a coat of cold setting adhesive compound.
 - ii) Fix 50 mm or Suitable thick insulation tightly with GI screw washer and 42 G or suitable AI. Foil as decided by IPR engineer in-charge at the time of work.

2.2.2 DUCTS PAINTING: All Supply and Return air ducts shall be painted with rubberized enamel paint of suitable colour shade as per engineer-in-charge instructions. Cleaning of ducts including removing dust, grease, oil, etc. Applying one coat of suitable Primer (or of main paint) of minimum thickness of 35 microns (dry film thickness) as per recommendations and instructions of manufacturers of paint using brush/ roller. Applying two coats of rubberized enamel paints of suitable shade (dry film thickness–DFT) all as per recommendations and instructions of manufacturers using brush/ roller. No. of coats 2 (TWO)

2.2.3 ACOUSTIC INSULATION: The first six meters of the ducts from the outlet of the supply air plenum shall have acoustic treatment with 25 mm thick crown-300 resin bonded glass fiber board covered with RP tissue paper and finished with 26 gauge perforated aluminum sheet. This cost shall be included in the cost of supply and fabrication of duct. Acoustic insulation shall be done in package room.

3. MEASUREMENT FOR WORKS:

3.1 DUCT WORK: Duct Length Shall be measured along the centre line from flange face to face unless otherwise stated. Duct work shall be measured on the basis of external surface area (length as measured above, multiply by duct perimeter)of ducts including the joints for each duct section. Duct measurement shall be taken before application of the insulation. For taper section average perimeter shall be used for measurement. For special pieces like bends, reducers, branches, and collars, mode of measurement shall be identical to as described above using the length along the centre line. The quoted unit rate for external surface of ducts shall include all wastage allowances, flanges and gaskets for joints, nuts and bolts, hangers and angles, and angles/flats with double nuts for supports, felt strip between duct and support, vibration isolation, inspection chamber / access panel, splitter damper with quadrant and lever for position indication, turning vanes, straightening vanes, and all other accessories required to complete the duct installation as per the specifications. These accessories shall not be separately measured nor paid for.

3.2 DUCT ACCESSORIES:

Measurement will be done by the cross section area perpendicular to air flow.

- Grilles and diffusers : width multiplied by height, excluding flanges, volume control dampers shall form part of the unit rate for registers and shall not be separately accounted.
- Diffusers : cross section area for air flow at discharge/capture area, excluding flanges. Volume control dampers shall form part of unit rate for supply air diffusers and shall not be separately accounted.
- Linear diffusers : shall be measured by linear measurements only, not by cross sectional areas, and shall exclude flanges for mounting of linear diffusers. The supply air plenum for linear diffusers shall be measured with ducting as described earlier.

- Fire Damper : shall be measured by their cross sectional area perpendicular to the direction of air flow. Quoted rates shall include the necessary collars, and flanges for mounting, inspection pieces with access door etc. No special allowances shall be payable for extension of cross section outside the air stream.
- Flexible connection: shall be measured by their cross sectional area perpendicular to the direction of air flow. Quoted rates shall include the necessary mounting arrangement, flanges, nuts and bolts and treated-for-fire requisite length of canvas cloth.

3.3 REFRIGERANT PIPING: One set of refrigerant piping include two liquid and two discharge lines for twin circuit package unit. The running meters of set of refrigerant pipe shall be measured.

4 ELECTRICAL INSTALLATION:

The scope of this section relates to supply, erection, testing and commissioning of electrical equipment for packaged AC unit. The works should be carried out with the relevant specifications, codes of practice.

- **MATERIALS:** All the materials, which may be used in the works, shall be of standard quality, conforming to approved make. All the materials procured and brought to site and not conforming to specifications and satisfaction of IPR shall be rejected and contractor shall have to remove the same immediately from site at his own expense and without any claim for compensation due to such rejection and shall provide proper replacement without any delay.
- **WIRING SYSTEM:** Wiring shall be suitable for 3 phase, 50 cycles, 4 Wire, and 415 volts between phase & neutral. The voltage and frequency of the supply shall be subject to variations permissible under the Indian electricity acts and rules.
- **DRAWINGS:** The tender drawings, which are enclosed, shall serve as scope drawings. They indicate general layout of AC equipment installation. **However the actual location, distance, levels etc. will be governed by actual site conditions.**
- **GENERAL APPLICABLE STANDARDS:** The equipment shall be designed to conform to the Indian Standards.
- **CONTROL AND INDICATING PANEL:** A control and indicating panel shall be provided for Chiller Package Unit. Panel shall be provided with alarm reset and lamp testing buttons. The above requirements are for each individual unit. Panel shall be free standing and of sheet metal, cubical type completes with the relays and wiring. Alarm shall be suitable for 230-V operation. All wiring for the controls shall be multi-core PVC control cables.
- **CABLE LAYING:** Cables shall be laid as per the guidelines. Distinguishing marks shall be made on the cable ends for identification. Insulation tapes of appropriate voltage and in red, yellow and blue colors shall be wrapped just below the sockets for phase identifications.
- **EARTHING:** All the non-current metal parts of electrical installation shall be earthed properly. All metal conduits, trunking, cable sheaths, switchgear, distribution fuse boards, luminaries and fittings and all other parts made of metal shall be bonded together and connected by means of specified earthing system.

5 TESTING AND BALANCING:

Cooling capacity of unit shall be computed from the measurement of Airflow, Dry & Wet Bulb Temperature of Air entering and leaving the cooling coil, SP etc. during commissioning. Computed results shall confirm to the specified capacity and quoted ratings.

The duct system shall be tested for air leakage, structural arrangement and joint air tightness. The contractor shall test all the ducting joints and others very carefully in presence of Engineer-in-charge. This will be carried out after completion of ducting and insulation work.

- After completion of installation of all air distribution system all duct shall be tested for air leakage.
- The entire air distribution shall be properly balanced.
- Air quantity supplied by the fan unit and delivered through various outlets shall be as specified and quoted.
- Volume or splitter dampers shall make branch duct adjustment.
- Damper shall be permanently marked after the balancing is complete so that these can be resorted to their correct position if disturbed at any time.
- Working of fire dampers shall be tested.

After the installation of the entire air distribution system is completed in all respects, all ducts shall be tested for air leaks by visual inspection. Function of fire damper shall also be checked after work completion.

The entire air distribution system shall be balanced using anemometer. Measured air quantities at fan discharge and at various outlets shall be identical to or less than 1 % in excess of those specified and quoted. Branch duct adjustments shall be permanently marked after air balancing is completed so that these can be restored to their correct position if disturbed at any time. Complete air balance report shall be submitted for scrutiny and approval, and four copies of the approved balance report shall be submitted along with the completion documents.

6 OTHER TERMS & CONDITIONS:

6.1 SUPERVISION BY THE CONTRACTOR: The contractor shall have sufficient supervisory work force so that one supervisor may be available on each job for day-to-day site work. The contractor shall have to arrange day-to-day planning and execution of each job.

6.2 COMPLETION CERTIFICATE AND JOINT INSPECTION: The Contractor shall give notice of completion to Engineer-in-Charge immediately after completion of work and shall arrange for a joint inspection of work by his representatives and the IPR representatives within the 7 days. Contractor shall rectify the defects pointed out during inspection within 7 days. Thereafter-final certificate to the effect that "The work has been completed to the satisfaction of IPR" shall be issued by the Engineer-in-charge / Project Leader of concerned section after the joint inspection and complying with the observations, if any made in the report. The work shall not be consider as complete until the contractor shall have removed from the premises on which the work shall be executed, all surplus materials.

6.3 STANDARD OF WORKMANSHIP AND MATERIAL USED FOR WORK: The contractor shall be required to execute the work in accordance with the standard of specifications and no deviation thereof shall be permitted without written permission from the Engineer-in- Charge. The entire work shall be free from poor and faulty workmanship and the contractor shall be liable to rectify all faults and defects if occurred and noticed within one year (Defect liability period) from the date of completion of the work.

6.4 SAFETY CODE: The contractor shall take all necessary precautions to ensure safety of laborers deployed for the said work and arrange to provide prompt medical assistance if required. The employer is not in any case responsible for any type of accident during the execution of works and it will be the total responsibility of the contractor. Adequate safety procedure to be adapted while painting of ducts to avoid any fire like No Smoking / Avoiding non-continuous work because of low flash point.

6.5 ELECTRICAL POWER: Institute may provide temporary power, at a single point at free of cost. The items like cables, bulbs, and electric fixtures shall be provided by the contractor at his cost. Institute will in no way be responsible for any delays in execution of the work if sufficient and continuous power is not available at site. For any mishap due to his irregular maintenance and negligence, contractor shall be held responsible and liable.

7 DOCUMENTS AND DRAWINGS:

To be submitted by the vender within two weeks from the placement of order and take the approval for all drawings from IPR Engineer In-charge.

- a) General arrangement drawing.
- b) Ducting drawing.
- c) Drawing showing details of each section of fan indicating connection details, mounting details of canvass connection, and details of supply and intake volume control dampers. Also submit the electrical drawings.
- d) Drawing for civil foundation work
- e) Leaflet and literatures.
- f) Test certificates of equipments.

8 COMPLETION PERIOD: Within 2 months from the date of issue of work order.

9 LIST OF IS STANDARDS:

The following IS specifications and standards will be applicable for the work.

• IS : 659 - 1964	Safety code for Air conditioning.
• IS : 8148	Specification for packaged air conditioning units.
• IS : 660 - 1963	Safety code for Mechanical Refrigeration.
• IS : 732 III - 1982	Inspection and testing of installation.
• IS : 4894	Test code for Centrifugal fan.
• IS : 1239 I & II - 1982	MS tube , GI pipes, tubular and other wrought steel fittings
• IS : 823 - 1964	Code of procedure for manual metal arc welding of MS
• IS : 3589	Electrically welded steel pipe for water, gas and sewage.
• IS : 5111 - 1969	Code of practice and measurement procedure for testing Refrigerant Compressors.
• IS : 732	Code of practice for electrical wiring and fitting for building.
• IS : 694 - 1977	PVC insulated(HD) electric cable for working up to of including 1100 volts.
• IS : 1248	Direct acting electrical indicating instruments.
• IS : 1822	Motor starters and voltage not exceeding 1000 Volts.
• IS : 8544 - I to IV 1979	Starters.
• IS : 2208 - 1979	HRC fuse and links, up to 650 Volts.
• IS : 655 - 1963	Ducting work.

- IS : 277 Galvanised steel sheets.
- IS : 4671 - 1984 Expanded polystyrene for thermal insulation purpose.
- IS : 7240 - 1981 Code for practice for application and finishing of thermal insulation material at temp. from -80°C to 40°C.& 40°C to 700°C.
- IS : 8183 - 1976 Specifications for Bonded Mineral Wool.

10 BASIS OF DESIGN AND UTILITIES REQUIREMENTS

SEMINAR HALL, FCIPT

1. AREA	170.78 Sqr. Mtr.
2. HEIGHT	3.6 Mtr.
3. AMBIENT CONDITIONS (SUMMER)	43.3 °C DB 26.0 °C WB
4. INSIDE DESIGN CONDITIONS	22 ± 1°C DB RH not exceeding 60 %
5. OCCUPANCY	60 to 70 Persons
6. LIGHTING LOAD	1 Watt per Sqr. Ft.
7. EQUIPMENT LOAD	3 kW Apprx.
8. FRESH AIR REQUIREMENT	1 Air Changes per Hour.

11 TEST READINGS

Package Unit Air conditioning System

Package units :

- Main volts / Amps.

Compressor :-

- Refrigerant suction pressure (LP, Bar) / Temp. °C.
- Refrigerant Discharge pressure (HP, Bar) / Temp. °C
- Discharge cutout pressure (Bar)
- Discharge cutin pressure (Bar)
- Suction cutout pressure(Bar)
- Suction cutin pressure(Bar)
- Compressor motor Amp.
- Noise level and Vibrations

Cooling Coil :-

- Surface(Face) area - Sq.m
- Return (entering coil) air Temp. DBT / WBT °C
- Supply (leaving coil) air Temp. DBT / WBT °C
- Air velocity across the cooling coil - m/min.
- Air volume -CMH capacity
- Heat removal capacity (TR)

Air cooled Condensor :

- Surface(Face) area - Sq.m
- Air Temp. In - DBT °C
- Air velocity across the coil - m/min.
- Air Temp. at Fan outlet - DBT °C
- Air Temp. at Grilles, Supply Duct outlets - DBT °C
- Air volume -CMH at Supply Duct outlets
- Air volume -CMH at fresh air intake
- Noise level and Vibrations

Controls :

- Operation of each control shall be checked / tested against operating and set limits.

Electrical panel :

- Shop testing like High voltage test, Insulation resistance test, Checking of circuit, Interlock wiring and earth wiring. Testing shall be carried out as per IS testing standards.

Room Conditions :

- Average reading of DBT / WBT °C, at 12-00 PM, 14-00 PM, and 16-00 PM on a test (summer/monsoon) day, shall be recorded to check the inside/room design condition.

Ducts:

Noise and Vibration level

SP

Air leakage

12 LIST OF APPROVED MAKES

SR. NO.	ITEM	APPROVED MAKE
A.	Packaged unit	Blue Star / Voltas / Batliboi / Kirloskar
B.	Cable	Gloster / Avocab / CCI / ICC / Polycab
C.	Circuit Breaker / Switch / Starter	L&T / Siemens / EE
D.	Push buttons / Indicating Lamps / Overload relays	Siemens / Technic / L&T/ EE
E.	Voltmeter / Ammeter	AE / MECO / IMP
F.	a) Extruded Aluminums Grilles / Diffusers Powder coated	Caryaire / Dinacraft / Cosmos / Rado / Shubh / Bhagirati
	b) GI sheets	Tata / Sail / Jindal / Nippon
G.	HP / LP Switch	Danfoss / Ranco / Indfoss
H.	Insulation and Lining Materials	Armacell / Bakelite / Beardsell / CoolLag / FGP / KIMMCO / LooydOwens Corning / Paramount / Penguin thermocole / Fiberglass Pilkington / UP Twiga / NA VAIR / Pyroguard / Aeroflex

13 TECHNICAL INFORMATION

(Technical information to be furnished / submitted in following format to IPR by Bidder)

1. Package Air conditioner

- Make / Model
- Refrigerant
- Nominal capacity (TR / CFM / Qty).
- No. of Refrigerant Circuits per unit.
- Refrigerant Charge / circuit/per PKG unit (kg).
- Overall power consumption (kW/TR.) & Rated full load current

- Special Features if any.
- Accessories Offered.
- Overall Dimensions (L X W X H)

2. Compressor

- Type / Make / Model /Qty.
- Speed / BHP at operating speed RPM / HP.
- Nominal / Max. capacity available (TR) at operating conditions.
- Capacity control/ no. of stages/ percentage per stage.
- BHP / TR ratio and EER
- **Operating conditions:**
Suction and Discharge pressure / Temp. (Bar/°C)
- **Design Conditions:**
Max. Operating Discharge pressure (Bar)

Min. Operating Suction pressure (Bar)

Test pressure (Bar)
- Compressor Motor Drive
- Electrical Characteristics
- Safety controls
- Lubricant Oil, type/make/grade/charge
- Operating Weight (kG) and Overall Size (mm)
- Mounting arrangement / Vibration Isolation.

3. Evaporator (Cooling Coil):

- Type / make / model / Qty.
- Tube material / size (OD mm)/ No. of Rows
- Fin material / FPI No.
- Coil Area (sq m)
- Bypass factor
- Cooling capacity (TR)
- Pressure drop (mm WG.)
- Test Pressure (Bar.)

4. Condensor (Air cooled)

- Type / make / model / Qty.per unit
- Tube material / size (OD mm)/ No. of Rows
- Fin material / FPI No.
- Face Area (sq m)
- Cooling capacity (TR)
- Pressure drop (mm WG.)
- Test Pressure (Bar.)
- **Condensor Fan:**
Type / make / model / Qty. per condensor / CFM
Motor:
Electric Characteristics
Speed (RPM) / HP / Rated Current.(Amp.)

5. Blower Assembly:

- Type / make / model / Qty. per unit / CFM
- Motor:
- Electric Characteristics
- Speed (RPM) / HP / Rated Current.(Amp.)

6. R A Filter:

- Type / Make/ Size / Capacity / Eff. / Qty.
- Max. Velocity through filter(mpm.)
- Max. Pressure drop (mm WG.)

7. Controls (Mention the Type / Make / Model / Size / Capacity / Qty):

- Safety controls- HP/LP/OP/Overload/Aerostat.
- Capacity controls- Thermostat / Humidistat.
- Expansion Valve
- Dampers
- Grilles
- Registers
- Diffusers

8. Others

- Insulation
- Ducting Material
- Electrical panel

9. Special features if any :

Note:

Also furnish product technical brochure

SCHEDULE OF QUANTITY
(To be filled & returned by the bidder)

SEMINAR HALL AT FCIPT, GANDHINAGAR

Sr. No.	Item description	Unit	Qty	Units rates (Rs.)	Price (Rs.)
1.	<p><u>Package Air Conditioner:</u> Supply, Installation, testing and Commissioning of approved make floor mounted type air cooled package air conditioning units each complete with hermetic / semi hermetic compressor, accessories, controls, air cooled condensing unit, integral refrigerant copper piping and accessories such as refrigerant shutoff valves at compressor and liquid refrigerant outlet, filter dryer, thermostatic expansion valves, 3 or 4 row deep copper tube and Aluminium fin type cooling coil, insulated copper piping between package unit and air cooled condenser, condensate drain piping, centrifugal blower with motor, Al cleanable return air filters, Electrical / electronic operating panel with all accessories, safety controls -HP/LP/OP, overload protection, aerostat, capacity controls -Room thermostat all housed in 16 G GI cabinet, vibration isolation. The unit shall be suitable for 415±10 % volts, 50 Hz, 3 phase AC supply.</p> <p>The complete Package Air conditioning Unit as described above with capacity of – (10 TR, 4000+ CFM)</p> <p>Note: Each package unit should contain 2 nos. separate compressor with twin circuit of equal TR capacity each.</p>	Nos.	2		
2.	<p><u>Set of Refrigerant piping:</u> Providing and fixing in position the set of copper pipes of sizes 5/8" & 7/8" or suitable for 10 TR (5.0 TR X twin circuit) for liquid line and discharge line respectively. The pipes cut to required lengths and fitted with necessary fittings and insulation. The scope also includes painting of piping with standard shade. One set of refrigerant piping include two liquid and two discharge lines for twin circuit package unit.</p>	RMT	30		
3.	<p><u>Electrical Work</u> Design, manufacture, supply, Installation, testing and commissioning of cubicle type, dead front, sheet steel, wall mounted control panels, perforated MS cable tray (of required size) etc. The panel shall be suitable for 500 volts, 50 Hz, and shall have separate compartments for Cu. bus bar.</p> <p>Scope of works: anchoring in to the wall / foundation, wiring and earthing terminating in to the main switch fuse unit in each panel, power / control wiring, earthing etc</p> <p>Following accessories shall be mounted within Control panel as per specifications.</p> <p><u>A Incoming</u></p> <ul style="list-style-type: none"> • Main incoming switch fuse unit <p>One no. 100 amps. TP MCCB with neutral link complete with following.</p> <ul style="list-style-type: none"> • 0-500 volt, 96x96 mm sq. Voltmeter with selector switch. • 0-100 Amps. 96x96 mm sq. Ammeter with 100/5 CTs and selector switch - 1 set. • O/V, U/V tripping mechanism for voltage fluctuation exceeding 10% of the rated value. • Single phase preventors and phase indicating lamps with toggle switches. 				

	<p>B. Busbar Cu Bus bars with heat shrinkable sleeves rated at 200 A. For 3-phase and neutral phase bus bar shall have maximum current density of 1Amp/Sq.mm and the neutral bus bar of not less than 50% capacity. - 1 set.</p> <p>C. Out going 2 nos. 63 amps TP MCCB (10 KA) with neutral link, outgoing feder for 10 TR package units each. The compartment shall contain CT operated ammeter with range of 0 – 63 amp, selector switch and indicating lamps with fuse and toggle switch for 'ON' and 'TRIP' status of units.</p> <p>Main Electrical panel with all accessories and wiring as described above</p>	Job	1		
4.	<p>Electrical cables: Supply, laying and termination of armored electrical cable for power supply from main electrical panel to package units and package units to out door condensing units respectively.</p> <p>I. 4 Core x 4.0 Sq. mm or suitable copper armoured cable. II. 3 Core x 2.5 Sq. mm or suitable copper armoured cable.</p>	RMT RMT	15 40		
5.	<p>Ducting: fabrication, installation and testing sheet metal ducts as per IS 655 and IS 277 according to the approved drawing, including necessary supports, angle frames, suspenders, anchor fasteners, nut & bolts, rubber gaskets, and the transition piece between blower and supply air duct shall be as per technical specification mentioned in tender document.</p> <p>Galvanized sheet steel ducts with Plenum (Supply and Return)</p> <ul style="list-style-type: none"> The six meters duct from the outlet of the blower shall be acoustically treated as per technical specification mentioned in tender document. The cost of acoustic insulation shall be included in the cost of ducting. Suitable size expanded Al. wire mesh / SS filter shall be provided for entire Return Air opening without any extra cost. 	Sq Mtr	125		
6.	<p>Canvas Connection: Supply, fabrication, Installation, and testing of flexible connections constructed of fire resistant flexible double canvas sleeve in accordance with approved shop drawings.</p>	Nos.	4		
7.	<p>SA & RA Grills / Diffuser: Supply, Installation, testing and balancing of powder coated extruded Aluminium, double deflection type, Suitable size supply and return air grilles/ diffuser provided at false ceiling in seminar hall, as per the approved shop drawings and the specifications with louvers dampers within ducts to be provided with suitable links, levers and quadrants for manual control of air flow and for proper balancing of the air distribution system, in accordance with the approved shop drawings and as per the specifications.</p> <p>A. AL grilles with volume control dampers, backed enamel painted as described above. B. AL grilles without volume control dampers, backed enamel painted as described above.</p> <p>Note: The supply and return air grills / diffusers will be selected in consultation with interiar designer/ Architects / IPR Engineers in charge.</p>	Sq Mtr Sq Mtr	2 2		

8.	<u>Fresh Air Dampers</u> Supply and installation of fresh GI / AL dampers with size 600 mm X 600 mm or suitable directed by IPR Engineer in-charge.	Nos.	2		
9.	<u>Fire Damper:</u> Fusible link type fire dampers at package out let with auxiliary switch/contactor. Wiring and interlocking for switching OFF the units in case of fire.	Sq Mtr	1.5		
10.	<u>Duct Insulation</u> The thermal insulation of supply and return ducts as per the tender specifications. Note: Exposed to atmosphere ducts (Supply and Return) having insulation as mentioned in tender.	Sq Mtr	125		
11.	<u>Condensate Drain Piping</u> Providing and fixing in position the following pipes cut to required lengths and necessary fittings with insulation. a. 25 mm dia. C-PVC Pipe b. 32 mm dia. C-PVC Pipe	RMT RMT	8 5		
12.	<u>Acoustic Insulation in package room with doors</u> Acoustic insulation (Supply and Fixing) with 25 mm thick crown-300 resin bonded glass fiber board covered with RP tissue paper and finished with 26 gauge perforated aluminum sheet in wooden framing	Sq Mtr	60		
13.	<u>Minor Civil Works</u> Minor civil works required to complete the above job. includes: <ul style="list-style-type: none"> • Mounting, grouting, PCC foundations, MS supports / stands for indoor/outdoor units, MS channel / angle for frame structure for installations of all equipments, parts etc. and Painting work of complete AC system. • MS structure for all condenser units • Cutting of wall to run ducts and after sealing the remaining space properly. • Removing existing exhaust fan, glass frame. Above mentioned work and required necessary work as indicate by IPR Engineer in-charge at time of work to complete whole job.	Job	1		
	<u>Total Price, In Rs. from Sr. No. 1 to 13 (In Figures)</u>				
	<u>Total Price, In Rs. from Sr. No. 1 to 13 (In Words)</u>				

	<u>Indicate percentage except Freight</u>		
	Percentage	Included	Excluded
Packing and forwarding			
Excise Duty			
Sales Tax/VAT			
Insurance			
Freight	Rs.		

Important Note:

- IPR reserves the right to add / delete any or all of the items mentioned in SOQ.
- Understand all the specifications, terms and conditions of this tender thoroughly, visit the site and contact the purchase officer for any clarification if necessary.
- *Deviations if any shall be clearly specified on separate sheet with all details.*
- **Note : The bidder should sign all pages of the tender in token of acceptance of the terms and condition and return the same to us.**

Date:
Place:

Name & signature of Bidders
(Office Seal)