NOTICE INVITING QUOTATION

Resident Engineer (EE) invites sealed quotations from the genuine firms/dealers for the material given below required at this Institute:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of article &amp; full specification</th>
<th>Unit</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SUPPLY OF 1.5 TR SPLIT TYPE AIR-CONDITIONERS FIVE* E five</td>
<td></td>
<td>120.000</td>
</tr>
<tr>
<td>2</td>
<td>SUPPLY OF 2.0 TR SPLIT TYPE AIR-CONDITIONERS FIVE</td>
<td></td>
<td>42.000</td>
</tr>
</tbody>
</table>

*STAR RATING 5

I. Rates are inclusive of all taxes. 2. Details as enclosed. 3. F.O.R. at IIT Delhi.

Specifications as enclosed with NIQ (Annexure I & II Annexure IV)

Note: Payment within 30 days after delivery

For submission of bills, E.M.V. Rs. 96,000/- in 3/01/7, Delhi may be submitted along with quotation.

The quotation will be received up to 2:30 p.m. and opened at 3:00 p.m. on due date of opening. Quotations received after 2:30 p.m. on due date are liable to be rejected.
(1) **SALES TAX:**
(a) Firm should be registered with Sales Tax Authorities.
(b) **Indicate:**
   (i) Sales Tax Registration Number.
   (ii) Percentage of Sales Tax for the subject item(s).
(2) **EARNEST MONEY:**
(a) Through Deposit call Receipt Pay order / Bankers cheque of schedule bank garunteed by R.B.I. and drawn in favour of “I.I.T. Delhi.”
(b) Offers without Earnest Money (wherever applicable) shall not be considered. Cheques will not be accepted.
(c) After opening of the quotations if any firm / agency wants to withdraw the offer or desires to make any change in the quotation which is not acceptable to the institute before issue of the Supply order 50% of the earnest money shall be forfeited. But after the issue of the supply order, no change or withdrawl shall be permitted. In such an event, full earnest money shall be forfeited.
(3) The sealed cover (envelop) of the quotations must clearly bear the under noted points:
   (a) Number and date of Quotation Notice.
   (b) Opening date of the quotations.
   (c) Name of the subject material offered.
   (d) Name of the firm.
   (e) Reference of Earnest Money.
   (f) Earnest Money should be sent along with quotations.
In the absence of the aforesaid information on the cover of the offer of the firm, the quotations will not be entertained.
(4) Offers may be addressed to:
Resident Engineer [ ] (Department to be mentioned)
Indian Institute of Technology

[Box: UNDER CERTIFICATION OF POSTING]
General Technical requirement for Split Air Conditioner for T E:

1. Air conditioner suitable for 230V, 50 Hz single phase AC supply shall be capable of performing the functions as cooling, dehumidifying, air circulating and filtering. The air conditioners shall be complete with automatic temperature control and cut-in and cutout etc. for temperature ranges 16 to 30 degree C. The differential of the thermostat for cut-in and cut-out shall not be greater than +/- 1.75 degree C. The Air conditioners may either be provided with adjustable step less type mechanical thermostat or electronic thermostat as per IS: 11338: 1985. The ECO friendly air conditioners shall have ECO MARK from Bureau of Indian Standards.

2. Outdoor unit of the air conditioners shall be fitted discharge cooled type rotary compressor operating on Refrigerant R-22 (or non-CFC refrigerant R-410 in case of Eco friendly Split Air Conditioner) with suitably rated capacitor start electric motor. It shall be equipped with overload protection and shall be mounted on resilient mountings for quiet operation. The Rotary compressor shall be of Matsushita/Hitachi/ Toshiba/ Carrier/ Emerson/ LG/ Tecumseh make and shall be covered by manufacturers test certificate and TTC to JISS or ASHRAE.

3. The minimum thickness of the base in outdoor unit shall be 1.20mm & sheet thickness for rest of the body shall be 0.70mm (Min.) with galvanized coating thickness of 120g/sq. m and shall be provided with stiffeners for robust construction and shall have rounded corners. Galvanized sheet shall conform to IS: 277/2003. Steel parts/fronts panel etc. shall have stove-enamelled finishprecede by through cleaning of the surface, phosphating and undercoat of anti-corrosive primer paint. Alternate methods of corrosion protection like plastic powder coating, electrostatic paintings shall also be acceptable in lieu of stove-enamelled finish.

4. The casting of the indoor units shall be made ABS/HIPS/GS and shall be impact resistant. The control box of indoor unit shall withstand flame retardant test to Grade V-O as per UL-94. For impact resistance the unit duly packed and dropped from a height of 1m shall show no damage. The filter pads provided shall be washable.

5. Remote cordless control with LCD/LED Display shall be provided with one On/Off timer, selecting fan speed (three speeds) and setting up of temperature. Display shall be provided on indoor unit or on handset or on both.

6. Maximum power consumption of the split air conditioners shall be measured at capacity rating test conditions. Overall power factor of the unit shall be at least 0.85 at capacity rating test conditions.

7. Two samples of each type/model of Air conditioners shall be type tested for cooling capacity and EER value by psychometric method to IS and rate contract requirements at third party NABL/ BEE accredited Laboratory. The EER values mentioned in schedule correspond to testing methods adopted in this specification and do not necessarily correlate one to with the values specified by BEE for 3, 4 & 5 star rating certification as mentioned in the Table 2.2 of the Gazette of India notification No. 024(E) dt. 05-01-2010, issued by Central Government of India. Standard evaluation of cooling capacity shall be done by connecting indoor and outdoor units with piping of 5m length with six bends of standard radius. Connecting copper tubing shall have dimensions suitable for the compressors offered with model.

Continued on next page....
8. **Servicing:** Free servicing shall be provided for 15 months from the date of dispatch or 12 months from the dates of installation of air conditioner whichever is earlier. Firm is also required to send service engineer at least 3 times during the warranty period.

9. **Warranty:** Warrantee shall be provided for 15 months from the date of dispatch or 12 months from the date of installation of air conditioner, whichever is earlier. **The compressor shall have additional warrantee of 4 years** (in addition to above warrantee of 12/15 months on whole unit.)

10. **Installation:** The installation charges consignee's site shall include the following work:
   i) Mounting/Fitting indoor and outdoor units at the respective locations.
   ii) Laying refrigerant piping of 6mtrs length and connecting both the units after drilling hole/holes in the wall, if required. Thickness of the copper tubing shall not be less than 0.70mm.
   iii) Insulating the suction pipe with expanded polyethylene foam with 5mm thick tubing.
   iv) Laying 15mm drain pipe 6m length to drain out the condensate water being formed in the indoor unit.
   v) Leak testing of the entire system.
   vi) Charging Refrigerant gas in the unit.
   vii) Suitable electric wiring between indoors and outdoors units. Switches/Sockets/Plugs are not included in the scope of supply.
TECHNICAL SPECIFICATION FOR AIR-CONDITIONING SYSTEM

The detailed specification of the 1.5TR/2 TR Capacity Split Air-conditioning units are as follows:

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Description of item</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Supplying of 1.5 TR Split Type Air-Conditioners</strong></td>
</tr>
<tr>
<td></td>
<td>Compressor Cooling Capacity Nominal (Watt) : 5250</td>
</tr>
<tr>
<td></td>
<td>Noise levels (indoor) (Db) Max. : &lt; 50</td>
</tr>
<tr>
<td></td>
<td>Min. Star rating : 5</td>
</tr>
<tr>
<td></td>
<td>EER (W/W) : ≥ 3.3</td>
</tr>
<tr>
<td></td>
<td>Make of Rotary Compressor: Mitsushita/ Hitachi/ Toshiba/ Carrier/ Emerson/ LG/ Tecumseh</td>
</tr>
<tr>
<td></td>
<td>Sheet Thickness for base (Out door Unit) : 1.20 mm</td>
</tr>
<tr>
<td></td>
<td>Sheet Thickness for body (Out door Unit) : 0.70 mm</td>
</tr>
<tr>
<td></td>
<td>Refrigerant : R-22 or refrigerant R-410A</td>
</tr>
<tr>
<td>2</td>
<td><strong>Supplying of 2 TR Split Type Air-Conditioners</strong></td>
</tr>
<tr>
<td></td>
<td>Compressor Cooling Capacity Nominal (Watt) : 7000</td>
</tr>
<tr>
<td></td>
<td>Noise levels (indoor) (db) Max. : &lt; 50</td>
</tr>
<tr>
<td></td>
<td>Min. Star rating : 5</td>
</tr>
<tr>
<td></td>
<td>EER (W/W) : ≥ 3.3</td>
</tr>
<tr>
<td></td>
<td>Make of Rotary Compressor: Mitsushita/ Hitachi/ Toshiba/ Carrier/ Emerson/ LG/ Tecumseh</td>
</tr>
<tr>
<td></td>
<td>Sheet Thickness for base : 1.20 mm</td>
</tr>
<tr>
<td></td>
<td>Sheet Thickness for body : 0.70 mm</td>
</tr>
<tr>
<td></td>
<td>Refrigerant : R-22 or refrigerant R-410A</td>
</tr>
</tbody>
</table>

(Note: 1. Quote rates separately for Refrigerant R-22 or other ECO friendly refrigerant.)
2. Annexure – I is the part of the quotation.
3. Technical details are mandatory to be filled in by the bidder in Annexure – II .

LIST OF APPROVED MAKES OF MATERIALS

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Name of material</th>
<th>Manufacturers/Brand names</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Window /split type Air- Conditioner</td>
<td>CARRIER/ BLUESTAR/ LG /SAMSUNG/ HITACHI/ O-GENERAL/ WHIRLPOOL/ GODREI/ DAIKIN/ VOLTAS/YORK/ ONIDA / GE/ MITSUBISHI ELECTRIC/ TOSHIBA/ PANASONIC.</td>
</tr>
</tbody>
</table>

Executive Engineer (Elect)  
D.A. (Works)
TECHNICAL SPECIFICATION FOR AIR-CONDITIONING SYSTEM

The detailed specification of the 1 TR Capacity Split Air-conditioning units and window air-conditioners are as follows:-

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Description of item</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Supplying of 1 TR Split Type Air-Conditioners</strong></td>
</tr>
<tr>
<td></td>
<td>Compressor Cooling Capacity Nominal (Watt) : 3500</td>
</tr>
<tr>
<td></td>
<td>Noise levels (indoor) (Db) Max. : &lt; 50</td>
</tr>
<tr>
<td></td>
<td>Min. Star rating : 5</td>
</tr>
<tr>
<td></td>
<td>EER (W/W) : ≥ 3.3</td>
</tr>
<tr>
<td></td>
<td>Make of Rotary Compressor : Mitsushita/ Hitachi/ Toshiba/ Carrier/ Emerson/ LG/ Tecumseh</td>
</tr>
<tr>
<td></td>
<td>Sheet Thickness for base (Out door Unit) : 1.20 mm</td>
</tr>
<tr>
<td></td>
<td>Sheet Thickness for body (Out door Unit) : 0.70 mm</td>
</tr>
<tr>
<td></td>
<td>Refrigerant : R-22 or refrigerant R-410A</td>
</tr>
<tr>
<td>2</td>
<td><strong>Supplying of 1 TR Window Type Air-Conditioners</strong></td>
</tr>
<tr>
<td></td>
<td>Compressor Cooling Capacity Nominal (Watt) : 3500</td>
</tr>
<tr>
<td></td>
<td>Noise levels (indoor) (db) Max. : &lt; 50</td>
</tr>
<tr>
<td></td>
<td>Min. Star rating : 5</td>
</tr>
<tr>
<td></td>
<td>EER (W/W) : ≥ 3.1</td>
</tr>
<tr>
<td></td>
<td>Make of Rotary Compressor : Mitsushita/ Hitachi/ Toshiba/ Carrier/ Emerson/ LG/ Tecumseh</td>
</tr>
<tr>
<td></td>
<td>Sheet Thickness for base</td>
</tr>
<tr>
<td></td>
<td>Sheet Thickness for body</td>
</tr>
<tr>
<td></td>
<td>Refrigerant : R-22 or refrigerant R-410A</td>
</tr>
<tr>
<td></td>
<td>(Note: - EER 3.30, 5 Star rated shall be preferred.)</td>
</tr>
</tbody>
</table>

(Note: -1. Quote rates separately for Refrigerant R-22 or other ECO friendly refrigerant.)
2. Annexure – I and III are the part of the quotation.
3. Technical details are mandatory to be filled in by the bidder in Annexure – II & IV.

LIST OF APPROVED MAKES OF MATERIALS

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Name of material</th>
<th>Manufacturers/Brand names</th>
</tr>
</thead>
</table>
ANNEXURE - II

Split Type Air Conditioner fitted with Rotary Compressor

Split type air conditioners conforming to IS: 1391 (Part-2)-1992 with amdts No.1 to 4 fitted with rotary compressor using HCFC refrigerant (R-22 or R-410 A) suitable for wall mounting.

Following details will fill by vendors/ Bidders for Split Air Conditioner of 1.5 TR and 2.0 TR

1.1 Name of the manufacturer

2.1 Model No.

3.1 Overall dimensions of Room unit (wall mounted) L x W x H (in mm)

4.1 Overall dimensions of outdoor unit L x W x H (in mm)

5.1 Name of the compressor manufacturer
   (a) Model of compressor
   (b) Capacity of Compressor at rated test conditions as per IS: 10617 (Part-1): 1983 (Reaffirmed 2001) incorporating amend no 1 to 3 Watt.
   © Rating of Compressor Motor ___________kW

6.1 (a) Net dehumidification effect at high speed as per C1.8.1 of ISS ___________ W
   (b) Net sensible cooling at high speed as per C1.8.1 of ISS ___________ m³/hr

7.1 Fan motor (outdoor unit)
   (a) Maximum input of fan motor (outdoor unit) ___________ Amp/watt
   (b) Type of Fan motor (outdoor unit) to IS: 996:1979 with amdts. No. 1, 2 & 3
   © What is the speed of Fan motor (outdoor unit) ___________ rpm?

7.2 (a) Power factor of the fan motor (outdoor unit) ___________
   (a) Air delivery of Condenser fan at full speed at rated voltage ___________ m³/hr

8.1 CONDENSER:
   (a) Face area of condenser ___________sq.m
   (b) Make of Condenser
   © Tube material of condenser. CD, and thickness in mm) ___________
   (d) Number of rows (condenser) ___________

8.2 (a) Number of tubes per row (condenser)
   (b) Fin material and thickness (condenser)
   (c) No. of fins per cm (condenser)
   (d) External surface area excluding fins (condenser) ___________ m²

9.1 Room discharge airflow at full speed at rated voltage ___________ m³/hr

10.1 EVAPORATOR COIL:
   (a) Tube material, O.D. & thickness of Evaporative coil
   (b) Number of rows of Evaporative coil. ___________
   © Make of Evaporative coil
   (d) No. of tubes per row - ___________ Nos

Continued on next page....
10.2 (a) Fin material and thickness of Evaporative coil.
(b) No. of fins per cm (Evaporative coil)
(c) Length of tubes excluding bends (Evaporative coil)
(d) External surface area including fins (Evaporative coil) \( \text{m}^2 \)

11.1 Filter
(a) Type /Make/material of Filter
(b) Area of Filter \( \text{m}^2 \)
(c) Thickness in mm
(d) Whether slip on type filter provided – Yes/ No

12.1 Drip tray
(a) Thickness of sheet of Drip tray. \( \text{mm} \)
(b) Material of Drip tray
(c) Depth of Drip tray. \( \text{mm} \)

13.1 Acoustics material
(a) Thickness of Acoustics material. \( \text{mm} \)
(b) Material and specification of acoustics material
(c) Trade name of Acoustics material

14.1 Refrigerant name
(a) Weight of the refrigerant charged into the unit. \( \text{gms} \)

15.1 Blower motor
(a) Make of Blower motor
(b) Make of Fan propeller/blower
(c) Maximum input of fan motor (Indoor unit) \( \text{Amp/watt} \)
(d) Type of Fan motor (Indoor unit) to IS: 996:1979 with amdt. No.1, 2 & 3.

15.2 (a) Does Fan motor (Indoor unit) have 3 speeds? If yes what are the speeds. \( \text{rpm} \)
(b) Power factor of the fan motor (Indoor unit)

16.1 Make of relay

17.1 Make of Thermostat with differential details

18.1 Are the manufacturer’s instructions and operation service, installation manual provided? Yes/No