

**Renovation of Operation Theatre and Labour room in Ayurveda college Hospital for Women & Children,  
Poojappura**

**PART III-HVAC**

<b>Item No.</b>	<b>Description of items</b>	<b>Unit</b>	<b>Quantity</b>	<b>Rate (In words &amp; figures)</b>	<b>Amount (In Rs.)</b>
PART A	MACHINERY				
1	Supply, installation, testing and commissioning (SITC) of 8.5 TR capacity aircooled Outdoor condensing unit with scroll compressor as per specifications complete with suitable capacity drive motor, air cooled condenser with all accessories, hermetically sealed scroll compressor, electronic microprocessor pendant controller with digital display, first charge R 22 refrigerant gas, vibration isolator pads and safety devices like thermal protector, pressure relief valve, over load relays single phase preventor, high-low pressure cut out, suitable for three phase 440V supply.	Each	1		
2	Supply, installation, testing and commissioning of suitable hard drawn copper refrigerant piping for 8.5TR machine with 13 mm nitrile rubber insulation interconnecting the condensing unit to evaporating unit for packaged units as per site condition	Rm	25		

3	<p>SITC of DX type double skinned air handling units, ceiling suspended/floor mounting type 8.5 TR, 1500 lps capacity complete with suitable DIDW blower (asper approved make), blower section, static pressure of 100mm of water column, built in pre filter(EU4), fine filter(EU7) and controls connected to condensing units, insulated SS drain pan, 6 row cooling coil, electric motor, belt drive package with TEFC motor class 'B' insulation, suitable for 3 phase, 415 V, 50Hz supply, suitable AHU panel &amp; cabling, AHU temp &amp; speed control panel , ARI certified, with 0.8mm double skinned 40mm thick PUF panel, belt guards, suitable supports for suspending from slab, vibration isolator, etc. conforming to specifications. The air handling units shall have 1 inlet refrigerant coils and 1 outlet refrigerant coils suitable for 1 numbers of 8.5 TR capacity ODU and shall conform to specifications.</p>	Each	1		
4	<p>Supply, installation, testing and commissioning (SITC) of 3 TR capacity aircooled Outdoor condensing unit with scroll compressor as per specifications complete with suitable capacity drive motor, air cooled condenser with all accessories, hermetically sealed scroll compressor, electronic microprocessor pendant controller with digital display, first charge R 22 refrigerant gas, vibration isolator pads and safety devices like thermal protector, pressure relief valve, over load relays single phase preventor, high-low pressure cut out, suitable for three phase 440V supply.</p>	Each	2		

5	Supply, installation, testing and commissioning of suitable hard drawn copper refrigerant piping for 3TR machine with 13 mm nitrile rubber insulation interconnecting the condensing unit to evaporating unit for packaged units as per site condition.	Each	53		
6	SITC of DX type double skinned air handling units, ceiling suspended/floor mounting type 3 TR, 600 lps capacity complete with suitable DIDW blower (asper approved make), blower section, static pressure of 40mm of water column, built in pre filter(EU4), fine filter(EU7) and controls connected to condensing units, insulated SS drain pan, 6 row cooling coil, electric motor, belt drive package with TEFC motor class 'B' insulation, suitable for 3 phase, 415 V, 50Hz supply, suitable AHU panel & cabling, AHU temp & speed control panel , ARI certified, with 0.6mm double skinned 40mm thick PUF panel, belt guards, suitable supports for suspending from slab, vibration isolator, etc. conforming to specifications. The air handling units shall have 1 inlet refrigerant coils and 1 outlet refrigerant coils suitable for 1 numbers of 3 TR capacity ODU and shall conform to specifications.	Each	2		

7	<p>Supply, intallation, testing and commissioning (SITC) of 3 TR capacity aircooled Ductable split air conditioner with scroll/rotary compressor, Ceiling Suspended Indoor Units (IDU) and all standard fittings, suitable static blower, 3 row cooling coil IDU SS drain pan, as per specifications complete with suitable capacity drive motor, air cooled condenser with all accessories, hermetically sealed compressor, electronic microprocessor pendant controller with digital display, first charge R 22 refrigerant gas, vibration isolator pads and saftey devices like thermal protector, pressure relief valve, over load relays single phase preventor, high-low pressure cut out, suitable for three phase 440V supply.</p>	Each	1		
8	<p>Supply, installation, testing and commissioning of Air Cooled High Wall mounted Split Air Conditioner of following capacity consisting of high wall mounted type room unit (fan coil) with cordless remote control and one number outdoor condensing unit comprising of enegy efficient suitable rotary compressor for operation on single phase, 230 V, 50Hz supply, fixing the outdoor unit on a raised platform as per manufacturers recommendation and fixing of room (fan coil) unit on wall, standard 4 m distance refrigerant copper piping with 13mm nitrile rubber insulation, providing and making interconnection between room &amp; condenser as per site conditions, comprising of 1" dia drain PVC pipe with insulation 4m, canvas connections, full electrical cabling from power plug near indoor unit and to outdoor unit, ODU MS stand, first charge refrigerant gas, suitable stabilizer etc complete as required.</p>				

8.1	1.5 TR 5 star rated as per BEE	Each	2		
9	Supply, Laying and Fixing of 4C 4Sq.mm size 1.1 KV grade XLPE insulated, PVC sheathed, armoured Aluminium conductor cable conforming to IS 7098 (Part 1) amended upto date with brass compression glands on surface/ cable tray/ wall / build in trench etc as required from the Indoor to outdoor units of all units for control wiring.	Rm	54		
10	Supply, installation, testing and commissioning PVC drain pipe of 25mm dia ISI marked, connecting the drain lines from the indoor units to floor sump, with 9mm nitrile rubber insulation as per specification	Rm	66		
11	SITC of Humidity Controller electric strip heaters in supply air plenum complete with fixing arrangements humdistat and safety thermostat including all supports, terminations, power and control wiring	Each	1		
<b>PART B</b>	<b>AIR DISTRIBUTION</b>				
12	Supply, installation, testing and commissioning of factory fabricated rectangular Aluminium sheet metal ducting for Supply/return/fresh air for OT, duct/collar connecting to indoor unit as per ducting specifications and with suitable supports using MS angles, channels, rods, anchor bolts, etc to roof /truss as per IS 655 and as per specifications.				

12.1	20 G	Sqm	44		
12.2	22 G	Sqm	164		
13	Supply, installation, testing and commissioning of factory fabricated rectangular GSS sheet metal ducting for Supply/return/fresh air duct/collar connecting to indoor unit as per ducting specifications and with suitable supports using MS angles, channels, rods, anchor bolts, etc to roof /truss as per IS 655 and as per specifications.				
13.1	20 G	Sqm	5		
13.2	22 G	Sqm	42		
13.3	24 G	Sqm	165		

14	SITC of External thermal insulation on supply air ducts using min 12mm thick nitrile rubber class "O" closed cell type with antimicrobial protection as per specifications	Sqm	329		
15	Supply, installation, testing and commissioning of Acoustic duct lining using 10mm nitrile rubber insulation open cell type inside the ducts, antimicrobial protection at the outlets of all indoor units upto 4m distance from fan outlet as per spec provided.	Sqm	91		
16	SITC of underdeck insulation using min 19mm thick nitrile rubber class "O" closed cell type with suitable adhesive GI wire netting at 0.6m spacing using screws as per specifications	Sqm	5		
17	Supply, fabrication, installation, testing of flexible connections made out of fire resistant flexible double canvas sleeve.	Set	4		
18	Supply, installation, testing and comissioning of Powder coated extruded aluminium Continuous grilles 16mm frame, 0-15deg deflection for supply / return air 150mm wide as per specification.	Sqm	10		

19	SITC of Powder coated extruded aluminium supply air diffusers 4 way both side coated with collar damper aluminium extruded black anodized (300mmX300mm/600mmx600mm)	Sqm	1		
20	SITC of Powder coated extruded aluminium return air diffusers 4 way both side coated without VCD.(300mmX300mm/600mmx600mm)	Sqm	1		
21	SITC of Fire Control Damper made of 16G GSS sheet blade and frame with 165mm casing, heavy duty interlocking blades and fully enclosed blade linkage mechanism, SS lateral seal blade seals, self lubricating sintered bronze bushes, fire rating as per UL555-1995 tested as per BS-476 part 20 with 18G extended sleeve 450mm and with fusible link, spring mechanism control panel temp sensor, smoke sensor, limit switch with lever for auto shut off in case of fire/smoke as per specifications.	Sqm	1		
22	SITC of multi blade type volume control dampers made of extruded aluminium for ducts/collars to be provided with suitable links, levers and quadrants for manual control of volume of air flow and for proper balancing of the air distributions system in main ducts, return ducts & other area as per specification.	Sqm	2		

23	SITC of Fresh air GI louvers of size 350x350 mm with wire mesh and birds screen for IDUs/AHUs as per specifications.	Sqm	3		
24	Supply and fixing of Terminal HEPA Filters having filtering efficiency of 99.7% down to 0.3 microns with aluminum frame works, suitable for fixing in the Supply air plenum boxes				
24.1	610 x 610 x305	Each	4		
24.2	450 x 450 x305	Each	1		
25	SITC of Plenum box made of 18G Aluminium sheet with frame work for fixing HEPA filters at terminals and provision of access door for removing the HEPA Filters for cleaning and replcaement .The size shall be to suit				
25.1	610 x 610 x305 mm	Each	4		
25.2	450 x 450 x305 mm	Each	1		

26	Supply installation testing and balancing of continuous Perforated Stainless Steel Grilles for supply and return air grilles in accordance with the approved shop drawings size 610 x 610 mm & 450 x 450 mm	Sqm	2		
27	Supply, installation, testing and commissioning of Inline Centrifugal duct fan with dynamically balanced impeller of 500cfm capacity, min 20 mm static , complete with GI box, with single phase direct driven motor with class B, IP44 protection with an internal automatic safety thermal overload protection, dynamically balanced impeller of following capacity, with an operating sound level of less than 55dB at 3 m distance.	Each	2		
	<b>TOTAL OF PART III- HVAC</b>				