

**AIR CONDITIONING SYSTEM ESTIMATE FOR MULTIDISCIPLINARY RESEARCH LABORATORY**  
**MEDICAL COLLEGE, THIRUVANANTHAPURAM,**

**HVAC SYSTEM**

Item No.	Description of items	Unit	Qty	Rate (Rs.) in figures & words	Amount (Rs.)
<b>Part III -HVAC</b>					
PART A - MACHINERY					
1	Supply, intallation, testing and commissioning (SITC) of 17 TR capacity aircooled Ductable split air conditioner with two nos of 8.5TR ODU with scroll compressor, 17TR Ceiling Suspended Indoor Units (IDU) and all standard fittings, IDU SS drain pan, as per specifications complete with suitable capacity drive motor, air cooled condenser with all accessories, hermetically sealed multiple scroll compressors, electronic microprocessor pendant controller with digital display, temperature and 3 speed control, first charge R 22 refrigerant gas, vibration isolator pads, ODU MS Stand 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.	Each	5		
2	Supply, intallation, testing and commissioning (SITC) of 11 TR capacity aircooled Ductable split air conditioner with scroll compressor, Ceiling Suspended Indoor Units (IDU) and all standard fittings, IDU SS drain pan, as per specifications complete with suitable capacity drive motor, air cooled condenser with all accessories, hermetically sealed multiple scroll compressors, electronic microprocessor pendant controller with digital display, temperature and 3 speed control, first charge R 22 refrigerant gas, vibration isolator pads, ODU MS Stand 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.	Each	5		

Item No.	Description of items	Unit	Qty	Rate (Rs.) in figures & words	Amount (Rs.)
3	Supply, installation, testing and commissioning of suitable hard drawn copper refrigerant piping for 11TR machine with 13 mm nitrile rubber insulation interconnecting the condensing unit to evaporating unit for packaged units as per site condition (in case of multiple compressor machine, unit length will be 1m of multiple pipes as required) .	RM	91		
4	Supply, intallation, testing and commissioning (SITC) of 8.5 TR capacity aircooled Ductable split air conditioner with scroll compressor, Ceiling Suspended Indoor Units (IDU) and all standard fittings, IDU SS drain pan, 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, temperature and 3 speed control, first charge R 22 refrigerant gas, vibration isolator pads, ODU MS Stand 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.	Each	3		
5	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	374		
6	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	203		

Item No.	Description of items	Unit	Qty	Rate (Rs.) in figures & words	Amount (Rs.)
7	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	113		
8	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 energy 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, incl 10m distance refrigerant copper piping with 13mm nitrile rubber insulation, providing and making interconnection between room & condenser as per site conditions, comprising of 1" dia drain PVC pipe with insulation 10m, canvas connections, full electrical cabling from power plug near indoor unit and to outdoor unit, ODU MS Stand, first charge refrigerant gas, min 5star rated as per BEE suitable stabilizer etc complete as required.				
8.1	2 TR	Each	6		
8.2	1.5 TR	Each	24		

Item No.	Description of items	Unit	Qty	Rate (Rs.) in figures & words	Amount (Rs.)
9	Supply and fixing Heater package with Humidistat and contactor for humidity control	Each	2		
PART B - AIR DISTRIBUTION					
12	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 ceiling/roof /truss as per IS 655 and as per specifications.				
12.1	20 G	sqm	24		
12.2	22 G	sqm	118		
12.3	24 G	sqm	569		

Item No.	Description of items	Unit	Qty	Rate (Rs.) in figures & words	Amount (Rs.)
13	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	606		
14	Supply, installation, testing and commissioning of Acoustic duct lining using 10mm nitrile rubber insulation open cell type inside the ducts, at the outlets of all indoor units upto 4m distance from fan outlet as per spec provided.	sqm	145		
15	Supply, fabrication, installation, testing of flexible connections made out of fire resistant flexible double canvas sleeve.	Set	10		
16	Supply, installation, testing and comissioning of Powder coated extruded aluminium Continuous grilles 16mm frame, 15deg deflection for supply / return air 150mm wide as per spec	sqm	47		
17	SITC of Powder coated extruded aluminium supply air diffusers 4 way both side coated with collar damper aluminuim extruded black anodized . (300mmX300mm/600mmx600mm)	sqm	9		

Item No.	Description of items	Unit	Qty	Rate (Rs.) in figures & words	Amount (Rs.)
18	SITC of Powder coated extruded aluminium return air diffusers 4 way both side coated without VCD.(300mmX300mm/600mmx600mm)	sqm	9		
19	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	5		
20	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 & other area as per specification.	sqm	10		
21	SITC of Fresh air GI louvers of size 300x300 mm with wire mesh and birds screen for IDUs/AHUs as per specifications.	sqm	6		
22	Supply, installation, testing and commissioning of Inline Centrifugal duct fan with dynamically balanced impeller of 700cfm capacity, min 10 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	5		
<b>GRAND TOTAL - Part III</b>					