

Schedule of Quantities (OPTION-2)

**Supply, Installation, Testing & Commissioning of Air conditioning System in Lecture Theatre Building (G+2) at
DAU Gandhinagar**

Sr. No.	Description of Item	Qty		Unit	Rate	Amount
		PER	TOTAL			
SH-I	Air Conditioning System					
1	Supply, installation, testing & commissioning of Floor Mounted AMCA standard Forward curved fan type Air Handling unit of following capacity with built in drive and drive package alongwith elect. Motor, AHU suitable for out door installation only. starter and cabling as per the specifications					
	Make: Ethos. Citizen. Carvaire					
	Body Construction : Supporting hollow extruded heavy-duty AL with internal coving thermal break section. 50mmthick Puf Panel with PUF insulation with density of 40 KG/Cm2. Inner skinn 22g in 120 GSM , Outer Skinn Precoated 22g, Base Frame of Unit in GSS. In Aluminum section structure.					
	Fan Section : -AMCA standard Forward curved fan mounted with IE4 TEFC motor with Drive Package installed on Aluminum Formed 'C' section with Cushy foot mount vibration pad. Fan section internally Accoustic Linned with 10 mm Open cell Insulation covered with 24 g Aluminium perforated sheet. Fire retardant canvass connection within the units. Aluminum Aerofoil. Supply air volume control Damper is part of This section					
	Cooling Coil : Cooling Coil made out from Copper tube (Plain), 0.41 mm, CopperAL fins, 0.13 mm Thickness, 11-12 FP. 4 Row Deep DX cooling Coil with Single/ Multiple Circuite. Coil Area @ 500FPM insulated S.S.Drain tray in S.S.304 Construction with 18 G. Insulated with 13mm Thick Insulation					
	Filter Section: Filter Frame in Aluminium Construction. Filter body from GI with minimum 50mm Depth. 7 ply 10 micron Filter down to 90%. Filter media Synthetic (Non woven type) HDPE washable type supported by rods. Not more than					
	Return Air Section : Made out From hollow extruded heavy-duty AL with internal coving thermal break section. 50mmthick Puf Panel with PUF insulation with density of 40 KG/Cm2. Inner skinn 22g in 120 GSM , Outer Skinn Precoated 22g. Base Frame of Unit in GSS Same As other section of Unit. Return Air duct connection with Aerofoil Aluminium Damper, Fresh Air Cut out with Aerofoil Aluminium Damper are part of this Section Only.					
a	5200 CFM @30 mm SP(EXTERNAL). Cooling Capacity 13.0 TR	2	12	Set		0.00
2	Air Cooled VRF/VRV type Out Door Unit. Make : Blue Star. Mitsubishi, Daikin					
	Supply, installation, testing & commissioning of High COP VRV/VRF Air Cooled Outdoor Condensing Unit consisting of high performance, low noise, VARIABLE speed scroll compressors, condenser coil, condenser fan, fan motor, microprocessor panel with display, wired remote controller with timed scheduler enclosed in a powder coated sheet metal casing, controlling the supplied indoor units. The unit shall have high static condenser fan. The unit shall have provision for control & monitoring from a central location with BACKNET/LANWORKS protocol, all enclosed in a powder coated sheet metal casing, supporting stand, coil protection mesh, vibration isolation pads, etc. out door unit suitable for 415V for outdoor, suitable for Double Skinned Air Handling Unit, set complete with Out door units, Refrigerant controllers, Tempraure Controller, Charge over Timer, Powder Coated stands out door unit accessories including fully charge refrigerant R410A as					

	Supply, Installation, Testing and Comissioning of Out-door units of following capacity in suitable configurations at design conditions (110/78 deg F) including, Isolation valves, Drier, Expation Valve, Thermostat, controlling devices and as per Technical specifications with Double Skinned Air Handling Unit. Net Capacity: - Unit will Deliver Capacity @ 43 Deg.C Ambient Condition with inside Condition of 25 Deg C & 50% RH. Other Requirement: - Supply, Installation, Testing and Commissioning (SITC) of LT Panel (Sl. No. 12), wall/floor mounted type, complete with suitably rated switchgears, starters and protective devices for the proper functioning of Air Cooled VRV/VRF type Outdoor Units (ODUs), including interconnection with appropriate rating of power cables between LT Panel and AHUs/ODUs, provision of control cabling for signal, interlock and control between LT Panel, Air Cooled DX type ODUs & their IDUs, insulating mats conforming to IS standards at the front and rear of LT Panels, and all other accessories required for safe and reliable operation; the scope shall be comprehensive in all respects, with the clear stipulation that all required cables					
a	16 HP	2	12	Set		0.00
b	Supply, Installation, Testing and Comissioning ofAHU Control Lit with Electronic Expation Valve, Thermostate ETC to control and Healthy opertion of AHU with VRV/VRF out door unit for 13.00 TR Cooling Coil. (OME to offer total pakage cost for this requirement)	2	12	Set		0.00
3	Refrigerant Piping and Insulation					
3.1	Refrigerant Piping					
	SITC of Insulated Refrigerant piping between the Air Handling units and the VRV/VRF outdoor units with minimum pipe					
	Refrigerant piping with hard/soft copper tube complete with all accessories & rod supporting work etc. of following					
	All refrigerant pipes shall be of hard drawn pipes in straight lengths shall be used. Wall thickness of all piping shall be 18 guage, 1.2 mm thick. Set of Gas and Liquide line both .					
	The refrigerant pipes to be laid in a suitable size ladder type cable tray. The price quoted shall also include the cost of the cable tray and the supporting arrangement for the cable tray.					
	Class 'O' Nitrile rubber insulation should be used to insulate the refrigerant pipes (As per OEM standerd but not lessthan 13 mm for Liquide line and 19 mm for Gas line) .					
	The price quoted shall include cost of refrigerant & oil, necessary supports, supporting tray, pressure testing, vaccumization & commissioning, etc.					
a	16 HP System	4	24	Rmt		0.00
b	13.00 TR AHU branch	20	120	Rmt		0.00
	Refrigerant Pipe (Copper pipe) Make: - Mandev, RR, Rajco.					
3.2	Commissioning of System with Vacuumizing and 1st Charge of Refrigerant					
a	16 HP with AHU	1	6	Job		0.00
3.3	Insulated UPVC Drain Piping					
	SITC of Insulated Drain piping between the Air Handling units/Hi wall Split AC Unit and nearest suitable drain Point with UPVC Pipe & UPVC Fitting. The Route length of drain piping shall be as per the drawings furnished. The price quoted shall include 6 mm Class O Insulation, accessories, hardwares, support system for required for leak proof piping work . Make:					
a	15 mm Dia		50	Rmt		0.00
b	25 mm Dia	9	204	Rmt		0.00
c	32 mm Dia			Rmt		0.00
d	40 mm Dia	12	72	Rmt		0.00
4	SITC of G.I. Sheet Metal Duct Work As Per IS-655made out from 120GSM Sheet. Make: Jindal, Tata, Essar					
4.1	Supply, installation, testing & commissioning of G.I. Sheet Metal Duct (Rectangular)					
a	0.63 MM (24G)	70	420	MT ²		0.00
b	0.80 MM (22G)	45	270	MT ²		0.00

4.2	Supply, installation, testing & commissioning of Powder Coated Extruded Aluminium Linear Grilles of required Airflow Angles with VCD . Make : CaryAire, Air Master, Cosmos,					
a	Supply, installation, testing & commissioning of Aluminium Linear Grilles in any size without VCD	10	60	MT ²		0.00
b	Supply, installation, testing & commissioning of Aluminium Linear Grilles in any size with VCD	3	18	MT ²		0.00
4.3	Double Canvass with Zip For Ductable unit and TFA, Circuller Fan ETC	8	48	Nos.		0.00
4.4	Supply, installation, testing & commissioning of Aluminuiun Aerofoil sectional Diffuser with dampers of following size					
a	595 x 595 mm (Grid Diffuser)	12	72	Nos.		0.00
5	Supply, installation, testing & commissioning of motorised fire & smoke dampers with actuators in supply / return air duct / path of conditioned air in AHU rooms. Fire dampers shall be complete with in-built temperature and smoke sensors and auxiliary switch to trip the AHUs and close the dampers simultaneously. These dampers shall also actuate in response to signal from central smoke alarm system which shall trip the AHU along with closing the damper. Testing of fire dampers shall be as per UL 555 and certified by CBRI. Annular space / Gap around ducting, between ducting & fire damper and around fire damper shall be sealed to make it air tight by Hilti make Fire stop mortar, CP 636 or equivalent other material.	2.4	14.4	MT ²		0.00
6	Supply, installation, testing & commissioning of volume dampers with locking arragment in supply / return air duct / path of conditioned air.	0.3	1.8	MT ²		0.00
7	Duct Insulation Work Make: Armacell, ArmaFlex, Superloan		0			
a	Supply, installation, testing & commissioning of 13-15 mm Thick Duct acoustic insulation with Opencell Insulation from the inside of the duct as per specifications. First 3.0 Mt from Discharge of Air handling Unit 13 MM THICK (Minimum)	40	240	MT ²		0.00
b	Supply, installation, testing & commissioning of 13 mm Thick Thermal insulation of Ducts with Close Cell Nitrile on the duct surface area as per specifications.	100	600	MT ²		0.00
	Supply, installation, testing & commissioning of 10 mm Thick Thermal insulation of Ducts with Close Cell Nitrile on the duct surface area as per specifications.	2	12	MT ²		0.00
8	Supply of following size XLPE insulated PVC sheathed Aluminium conductor armoured power Copper cable of 1.1 KV grade		0			
a	4C x 6 sq. mm.	24	144	Mtrs.		0.00
b	4C x 4 sq. mm.	24	144	Mtrs.		0.00
c	5Cx1.5 Sq,mm (As per requirement of Control wiring)	0	0	Mtrs.		0.00
d	2xx1.0 Sq.mm (for Thermostate)	36	216	Mtrs.		0.00
9	SITC of G I 16 G Earthing wire between HVAC Control Panel and HVAC Equipements	55	330	Mtrs.		0.00
10	SITC of Cable Tray 150 MM	3	18	Mtrs.		0.00
11	SITC of HVAC Control & Power Panel for AHU with start / stop push button . The Panel will have Drawing Folder Provision. The Panel to be Fabricated from 16swg sheet duly powder coated of RAL Shade 7032, including required internal control cabling & ON/OFF / TRIP Indication. Panel should have provision for interlocking with AHU's Fan Starter with VRV/VRF Condesing Unit & AHUs with MCB of Suitable Range as Isolator, contactor, thermal relay volt meter ,Ampier meter etc.	1	3			
	Each panel is Capable to contro (required all Control and power Interl wiring, Contactor,Relay MCB etc)I HVAC System in 1. 2 Set of AHU(5200 CFM@30mmSp) Fan with 2no 16 HPVRV/VRF OUTDOOR unit. 3. 1500 CFM TFA Unit 4. 1Phase Power Point with switch For Service . Panel to be madeafter Approval of Drawing from EIC/Consultant.	1	3	Nos.		0.00
12	M.S. Fabrication work For Instlation of HVAC equipments As per Site Requirements in Consultation with EIC ,Consultant.	100	600	KG		0.00
11.0	Treated Fresh Air Unit					
	Supply, Installation, testing and commissioning of Ceiling mounted Treated Fresh Air Unit. consisting of Tube Type Heat Exchanger, Fresh Air Fena having 1500 CFM ,Exhaust Air Fan 1500 CFM Fresh Air Filter .operation on 1-phase, 230 volts, 50 Hz AC supply (or as per OEM). including mounting unit from the ceiling with suitable brackets/ tie rod as per standard practice in the industry, as required.	1	6	Each		0.00

12	Supply of 2.0 TR (or as per OEM) capacity having nominal cooling capacity of minimum 24000 BTU/Hr. suitable for operation on single phase, 230 volts, 50 Hz AC supply (or as per OEM) High wall Split type Airconditioners not less than 5 star rating copper coil, inverter type fitted with extra powerful rotary/ reciprocating compressors, including remote, regfrigerant R-32/ non CFC suitable for wall mounting confirming to IS 1391/ Part – 21/92 Amdt. No. 1 (except power consumption norms) with 10 feet copper refrigeration pipes and suitable copper cable and having features like auto air swing(2 way swing), speed setting(3/3), operation control (electronic), auto restart, on timer, evaporator type (2 bend eva) and capable of performing:- (a) Cooling (b) Dehumidifying. (c) Air-circulating (d) Filtering (anti-bacteria). Net Capacity: - Unit will Deliver Capacity of minimum 1.8 TR @ 41 Deg.C Ambient Condition with inside Condition of 25 Deg C & 50% RH. Make: Blue Star, Mitsubishi, Daikin	2	2	Each		0.00
13	Supply of 1.5 TR (or as per OEM) capacity having nominal cooling capacity of minimum 18000 BTU/Hr., minimum 400 CFM suitable for operation on single phase, 230 volts, 50 Hz AC supply (or as per OEM) High wall Split type Airconditioners not less than 5 star rating copper coil, inverter type fitted with extra powerful <i>rotary/ reciprocating</i> compressors, including remote, regfrigerant R-32/ non CFC suitable for wall mounting confirming to IS 1391/ Part – 21/92 Amdt. No. 1 (except power consumption norms) with 10 feet copper refrigeration pipes and suitable copper cable and having features like auto air swing(2 way swing), speed setting(3/3), operation control (electronic), auto restart, on timer, evaporator type (2 bend eva) and capable of performing:- (a) Cooling (b) Dehumidifying. (c) Air-circulating (d) Filtering (anti-bacteria). Net Capacity: - Unit will Deliver Capacity @ 41 Deg.C Ambient Condition with inside Condition of 25 Deg C & 50% RH.	2	2	Each		0.00
14	Supply of 1.0 TR (or as per OEM) capacity having nominal cooling capacity of minimum 12000 BTU/Hr., minimum 400 CFM suitable for operation on single phase, 230 volts, 50 Hz AC supply (or as per OEM) High wall Split type Airconditioners not less than 5 star rating copper coil, inverter type fitted with extra powerful <i>rotary/ reciprocating</i> compressors, including remote, regfrigerant R-32/ non CFC suitable for wall mounting confirming to IS 1391/ Part – 21/92 Amdt. No. 1 (except power consumption norms) with 10 feet copper refrigeration pipes and suitable copper cable and having features like auto air swing(2 way swing), speed setting(3/3), operation control (electronic), auto restart, on timer, evaporator type (2 bend eva) and capable of performing:- (a) Cooling (b) Dehumidifying. (c) Air-circulating (d) Filtering (anti-bacteria). Net Capacity: - Unit will Deliver Capacity @ 41 Deg.C Ambient Condition with inside Condition of 25 Deg C & 50% RH.	10	10	Each		0.00
15	Installation, Testing & commissioning of A/C units as mentioned in item no- 12,13&14 which includes mounting of indoor & outdoor unit including supply and fixing of MS stand at their respective location along with laying of refrigerant pipeline with insulation & flexible PVC covering pipe up to standard length supplied with the unit , connecting both the units , leak testing of entire system, connecting both indoor and outdoor units with three core 2.5 sq mm PVC insulated flexible copper cable supplied with the unit, top up of refrigerant (if required), minor civil repairing work as per site requirement complete as required.	14	14	Job		0.00
16	Providing & fixing of suitable size Copper Refrigerant piping suitable for R-32 (supply and return) refrigerant with expanded polythene foam insulation tubing with flexible PVC covering pipe for split type air conditioners as required. (Measurement of 1 Running mtr. will include both supply & return Cu. Piping with insulation excluding standard length supplied by OEM with AC unit). Refrigerant Pipe (Copper pipe) Make: - Mandev, RR, Rajco.	180	180	Mtr.		0.00
16	Supply & fixing of 3 core, 2.5 sq mm size copper conductor flexible cable for the interconnections between indoor & outdoor units of approved make complete as required at site. (Measurement excluding standard length supplied by OEM with AC unit).	200	200	Mtr.		0.00
19	Supply & fixing of Circuller Inline Fan with 800 CFM @6 mm SP for Toilet Block Ventilation Make : Cary Air/ krugger/AirFlow	6	6	Mtr.		0.00
TOTAL (A)						0.00

	GST @ 18% ON 'A'	0.00
	TOTAL	0.00
	SAY Rs.	0.00

Rupees