

**RENOVATION AND MODIFICATION OF LECTURE HALL
(INCL. CIVIL, ELECTRICAL, AV SYSTEM, HVAC & FIRE)
IN FIRST FLOOR OF JAC, JIPMER, PUDUCHERRY**

**Volume- IV
BILL OF QUANTITIES**

Tender No: HLL/IDD/CHN/20-21/044

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**HLL LIFECARE LIMITED
(A GOVT. OF INDIA ENTERPRISE)
JIPMER Campus, Dhanvantari Nagar,
Puducherry - 605006
Ph : 0413 - 2298295
Web: www.lifecarehll.com**

BILL OF QUANTITIES						
TENDER NO: HLL/IDD/CHN/20-21/044 DATED 13.05.2020						
NAME OF WORK: RENOVATION AND MODIFICATION OF LECTURE HALL (INCL CIVIL, ELECTRICAL, AV SYSTEM, HVAC & FIRE) IN FIRST FLOOR AT JAC, JIPMER, PUDUCHERRY.						
S. No	Description of works	Unit	Qty	Rate in figs in Rs.	Rate in words In Rupees	Amount in figs In Rs.
1	Repairs to plaster of thickness 12 mm to 20 mm in patches of area 2.5 sq. meters and under, including cutting the patch in proper shape, raking out joints and preparing and plastering the surface of the walls complete, including disposal of rubbish to the dumping ground, all complete as per directions of Engineer-In-Charge. With cement mortar 1:4 (1 cement : 4 fine sand)					
1.1	With cement mortar 1:4 (1 cement : 4 fine sand)	Sqm	61.10			
2	Providing and fixing false ceiling at all height including providing and fixing of frame work made of special sections, power pressed from M.S. sheets and galvanized with zinc coating of 120 gms/sqm (both side inclusive) as per IS : 277 and consisting of angle cleats of size 25 mm wide x 1.6 mm thick with flanges of 27 mm and 37mm, at 1200 mm centre to centre, one flange fixed to the ceiling with dash fastener 12.5 mm dia x 50mm long with 6mm dia bolts, other flange of cleat fixed to the angle hangers of 25x10x0.50 mm of required length with nuts & bolts of required size and other end of angle hanger fixed with intermediate G.I. channels 45x15x0.9 mm running at the spacing of 1200 mm centre to centre, to which the ceiling section 0.5 mm thick bottom wedge of 80 mm with tapered					

	<p>flanges of 26 mm each having lips of 10.5 mm, at 450 mm centre to centre, shall be fixed in a direction perpendicular to G.I. intermediate channel with connecting clips made out of 2.64 mm dia x 230 mm long G.I. wire at every junction, including fixing perimeter channels 0.5 mm thick 27 mm high having flanges of 20 mm and 30 mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450 mm centre, with 25mm long dry wall screws @ 230 mm interval, including fixing of gypsum board to ceiling section and perimeter channel with the help of dry wall screws of size 3.5 x 25mm at 230 mm c/c, including jointing and finishing to a flush finish of tapered and square edges of the board with recommended jointing compound , jointing tapes , finishing with jointing compound in 3layers covering upto 150 mm on both sides of joint and two coats of primer suitable for board, all as per manufacturer's specification and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed, all complete as per drawings, specification and direction of the Engineer in Charge but excluding the cost of painting with :</p>					
2.1	<p>Fully Perforated Gypsum Plaster Board of size 1200 x2400x12.5 mm having approx. 15 % perforated area with perforation size and pattern as approved by the Engineerin-charge and as per manufacturer's specification, with all 4 side tapered and</p>	Sqm	82.93			

	backed by acoustical tissue with NRC value not less than 0.60.					
3	Filling the gap in between aluminium frame & adjacent RCC/ Brick/Stone work by providing weather silicon sealant over backer rod of approved quality as per architectural drawings and direction of Engineer-in-charge complete.					
3.1	Upto 5mm depth and 5 mm width	Metre	107.00			
4	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge. Concealed work, including cutting chases and making good the walls etc.					
4.1	25 mm nominal outer dia Pipes	Metre	40.00			
4.2	32 mm nominal outer dia Pipes	Metre	114.00			
5	Removing dry or oil bound distemper, water proofing cement paint and the like by scrapping, sand papering and preparing the surface smooth including necessary repairs to scratches etc. complete.	Sqm	698.67			
6	Wall painting with premium acrylic emulsion paint of interior grade, having VOC (Volatile Organic Compound					

) content less than 50 grams/ litre of approved brand and manufacture, including applying additional coats wherever required to achieve even shade and colour.					
6.1	Two coats	Sqm	889.91			
7	Cutting holes up to 30x30 cm in walls including making good the same:					
7.1	With common burnt clay F.P.S. (non modular) bricks	Each	16.00			
8	Providing and fixing double scaffolding system (cup lock type) on the exterior side, up to seven story height made with 40 mm dia M.S. tube 1.5 m centre to centre, horizontal & vertical tubes joining with cup & lock system with M.S. tubes, M.S. tube challies, M.S. clamps and M.S. staircase system in the scaffolding for working platform etc. and maintaining it in a serviceable condition for the required duration as approved and removing it there after .The scaffolding system shall be stiffened with bracings, runners, connection with the building etc wherever required for inspection of work at required locations with essential safety features for the workmen etc. complete as per directions and approval of Engineerin-charge .The elevational area of the scaffolding shall be measured for payment purpose .The payment will be made once irrespective of duration of scaffolding. Note: - This item to be used for maintenance work judicially, necessary deduction for scaffolding in the existing item to be done.	Sqm	403.60			
9	Providing and fixing wash					

	basin with C.I. brackets, 15 mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever require:					
9.1	White Vitreous China Flat back wash basin size 550x400 mm with single 15 mm C.P. brass pillar tap	Each	1.00			
10	Providing and fixing C.P. brass angle valve for basin mixer and geyser points of approved quality conforming to IS:8931					
10.1	15mm nominal bore	Each	1.00			
11	Providing and fixing 600x450 mm beveled edge mirror of superior glass (of approved quality) complete with 6 mm thick hard board ground fixed to wooden cleats with C.P. brass screws and washers complete.	Each	1.00			
12	Wiring for light point / fan point / exhaust fan point / call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface/recessed medium Type PVC conduit with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sqmm, FRLS PVC insulated copper conductor single core cable etc. as required.					
12.1	Group C	Point	50.00			
13	Wiring for circuit/submain wiring along with earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable					

	in surface/recessed medium class PVC conduit as required.					
13.1	2 x 2.5 sq.mm + 1x 2.5 sq.mm earth wire	Metre	600.00			
13.2	2 x 4 sq.mm +1x 4 sq.mm earth wire	Metre	550.00			
13.3	4 x 10 sqmm + 2 x 6 sqmm earth wire	Metre	115.00			
13.4	4 x 16 sqmm + 2 x 10 sqmm earth wire	Metre	610.00			
14	Supplying and fixing following modular switch/socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.					
14.1	5/6 A switch	Each	23.00			
14.2	15/16 A switch	Each	30.00			
14.3	3 pin 5/6 A socket outlet	Each	23.00			
14.4	6 pin 15/16 A socket outlet	Each	30.00			
14.5	Telephone socket outlet	Each	1.00			
15	Supplying and drawing 2 pair, 0.5 sq mm FRLS PVC insulated copper conductor, un armoured telephone cable in the existing surface/recessed steel/ PVC conduit as required.					
15.1	2 Pair	Mtrs	600.00			
16	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/recessed Steel/ PVC conduit as required.					
16.1	1 run of cable	Metre	600.00			
16.2	2 run of cable	Metre	120.00			
17	Supplying and fixing of					

	Medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.					
17.1	25 mm	Metre	750.00			
17.2	32 mm	Metre	200.00			
18	Supplying and fixing 2 modular stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	Each	30.00			
19	Supplying and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.	Each	15.00			
20	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.					
20.1	1 or 2 Module (75 mmX75 mm)	Each	3.00			
20.2	3 Module (100 mmX75 mm)	Each	30.00			
20.3	6 Module (200 mmX75 mm)	Each	17.00			
21	Installation, testing and commissioning of pre-wired, fluorescent fitting / compact fluorescent fitting of all types, complete with all accessories and tube/lamp etc. directly on ceiling/ wall, including connections with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and earthing etc. as required.	Each	108.00			
22	Supplying and fixing extra	Each	30.00			

	conduit down rod of 20 cm length G.I. pipe 15 mm dia, heavy gauge including painting etc. as required. (Note : More than 5 cm length shall be rounded to the nearest 10 cm and 5 cm or less shall be ignored)					
23	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)					
23.1	12 way, Double door	Each	1.00			
23.2	16 way, Double door	Each	1.00			
24	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/ Isolator)					
24.1	8 way (4 + 24), Double door	Each	2.00			
25	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.					
25.1	Single pole	Each	80.00			
25.2		Each	12.00			

	Single pole with neutral					
25.3	Triple pole and neutral	Each	4.00			
26	Supplying and fixing following rating, four pole, 415 V, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.					
26.1	40 Amps	Each	6.00			
26.2	63 Amp	Each	2.00			
27	Supplying and fixing following rating, four pole, (three phase and neutral), 415 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required					
27.1	40 Amps	Each	6.00			
27.2	63 Amp	Each	2.00			
28	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 kV grade of following size on cable tray as required.					
28.1	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)	Mtr	50.00			
28.2	Upto 35 sq. mm (clamped with 1mm thick saddle)	Mtr	25.00			
29	Supplying and making end termination with brass compression gland and aluminium lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 kV grade as required.					

29.1	3½ X 95 sq. mm (45 mm)	Each	2.00			
29.2	3½ X 25 sq. mm (28mm)	Each	6.00			
30	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 meter long etc. with charcoal/ coke and salt as required.	Set	5.00			
31	Providing and fixing 25 mm X 5 mm copper strip on surface or in recess for connections etc. as required.	Meter	100.00			
32	Supplying and fixing 20 amps, 240 volts, SPN industrial type, socket outlet, with 2 pole and earth, metal enclosed plug top alongwith 20 amps "C" curve, SP, MCB, in sheet steel enclosure, on surface or in recess, with chained metal cover for the socket out let and complete with connections, testing and commissioning etc. as required.	Each	2.00			
33	Installation, testing and commissioning of ceiling fan, including wiring the down rods of standard length (upto 30 cm) with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable etc. as required.	Each	30.00			
34	Providing and fixing 4.00 mm dia copper wire on surface or in recess for loop earthing as required.	Mtr	60.00			
35	Supply, installation, balancing and commissioning of factory fabricated GSS					

	sheet metal rectangular/round ducting complete with neoprene rubber gaskets, elbows, splitter dampers, vanes, hangers, supports etc. as per approved drawings and specifications of following sheet thickness complete as required.					
35.1	Thickness 0.63 mm sheet	Sq m	50.00			
36	Supplying, installation, testing & commissioning of intelligent analog addressable photothermal detector complete with mounting base complete as required.	Nos	50.00			
37	Supplying, installation, testing & commissioning of intelligent addressable thermal detector with rate of rise cum fixed temperature thermistor complete with base as required.	Nos	2.00			
38	Supplying, installation, testing & commissioning of response indicator on surface/recessed MS Box having two LED, metallic cover complete with all connections etc as required.	Nos	25.00			
39	Supplying, installation, testing & commissioning of addressable manual call point complete as required. (Pull Type)	Nos	2.00			
40	Supplying, installation, testing & commissioning of intelligent addressable programmable sounder complete as required.	Nos	2.00			
41	Supplying & laying of 2x1.5 sqmm fire alarm armoured cable, 600/1000V rated with annealed copper conductor having XLPE insulation, steel wire armouring & FRLS	Mtrs	450.00			

	outer sheath complete as required.					
42	Supplying, installation, testing & commissioning of fault isolator complete with base as required.	Each	4.00			
43	Supplying, installation, testing & commissioning of 1.5/3/6W metal box ceiling/wall speakers complete as required.	Each	35.00			
43	Supply and Installation of Acoustics false ceiling of Anutone Subtex Nubby, square edge, Glassfibre core fully encapsulated ceiling tile of size 595x595x15mm having density 100-120Kgs/m ³ , weight 1.5-1.8kg/m ² which is suspended by using 0.3mm thick and 15mm wide pre coated metal T15 grid system. The T15 Grid system of 600x600mm module shall include wall angle (WA15W30) with unequal flanges of size 14&20mm wide, length 3000mm, 0.43mm thick fixed along the perimeter of walls with the help of nylon sleeves and suitable fasteners at 300mm centers. Then suspend the Main T15 (MT15W36) having flange width 15mm, height 32mm and length 3600mm from the soffit with help of soffit cleat and wire rod with leveling spring clip at 1200mm c/c. Cross T15 (CT15W12) having flange width 15mm, height 32mm and length 1200mm is then interlocked into the pre-cut slots in the Main T15 at 600mm centers in the direction perpendicular to the Main T15. Finally Cross T15 (CT15W06) having flange width 15mm, height 32mm and length	Sqm	315.47			

	<p>600mm are then interlocked into the pre cut slots in the 1200mm Cross T15 at 1200mm centers and in direction parallel to the Main T15. Subtex Nubby Square edge of size 595x595x15mm thick shall be placed into the grid size of 600x600mm. Ensure arrow marks behind subtex panels are oriented in one direction to achieve uniform shade. Technical Parameters Core - Glassfibre, Fire – Class 1 & P, Acoustics – NRC 0.9, Climate (OC RH) – 40, 95, Termite resistance – Yes, Light reflectance – 85 % , Green (RC %) – 35, Hygiene (VoC, Clean room) – Low, Class 3 ,Strength, Load capacity (Kg) - Antisag –</p>					
44	<p>Supply & installation of Acoustical Wall Panels Anutone Synth Slim on strand panels of Anutone Slats made of pinewood fiberboard,Melamine laminated finish, groove perforated slats L16-2 - backlined with black acoustical fleece, tongue-groove edge for a seamless look, of size 128x2440x16mm thick having base density 800Kg/m3, weight 12Kgs/m2 installed by using GI strut system. The GI strut system includes GI Cross channel (CC25) having thickness 0.55mm, length 3600mm, knurled web 50mm, depth 25mm and equal flanges 15mm is fastened vertically/horizontally at every 600mm centers. Aluminium core cross channel (CC18) having thickness 0.5mm, length 2400mm, web 15mm & 27mm, depth 18mm and</p>	Sqm	113.36			

	<p>flanges of 7mm with suitable edge & centre brackets is then fixed perpendicular to the CC10 with the help of fasteners at every 400mm centers. Slats of size 128x2430x16mm in then fixed perpendicular to CC18 with suitable edge & centre brackets. Contractor to provide expansion joints of 3mm at every 5mtrs bothways. Panels shall be backlined with acoustical infill of Anutone Synth PF 5x25mm thick adhered to the wall using Stick 7 adhesive. Technical Parameters : Core Variants - Pinewood E1 Fibreboard, Fire – Class 1 & P, Acoustics – NRC upto 0.75, Climate (OC RH) – 50, 70, Light reflectance – 75% (beech haya), Green (RC %) – 25, Hygiene (VoC, Clean room) – Low, Class 1, Strength, Load capacity (Kg) - Ball-Impact.</p>					
45	<p>Supply and installation of Acoustical Wall Panels Anutone Synth Slim, polyfibre panels, core-pigmented, high-density, SynthPF rigid panels of size 1200x2400x9mm thk, volume density 210 - 230kg/m3, weight 1.9 - 2.1kg/m2 installed by using Anutone Strut framework system. The Anutone Strut framework systems includes Anutone Strut CC25 Cross Channel having thickness 0.55mm, length 3600mm, knurled web 50, depth 25mm and equal flanges 15mm is fastened to wall positioned horizontally in a regular manner at 600mm c/c. Anutone Strand, Square edge, Magnesite bonded pinewood fibre core tiles of size 600x2400x20mm, density 400 kgs/m3, weight</p>	Sqm	202.28			

	8kg/m2 are fastened to Strut CC25 Cross channel with suitable fasteners. Longer edges of the panel should be perpendicular to Strut CC25 Cross Channel. Synth Slim Panels are then adhered to strand behind with stick S7 adhesive. The system is backlined with the acoustical infill Anutone SynthPF 10x25. Technical Parameters of Synth Slim Fire (Class) – B, Acoustics – NRC 0.4 (For A mounting), Thermal conductivity (W/mk)– na, Climate (°C, RH) – 50, 99, Light reflectance (%) – Colour Dependant, Green (VoC, RC %) – Nil, 30 ; Technical Parameters of Strand , Fire (Class) – 1 & P ,Acoustics – NRC 0.90 (For 25mm C50 Mounting), Thermal conductivity (W/mk)– 0.1, Climate (°C, RH) – 50, 95, Light reflectance (%) – 80, Green (VOC, RC %) – Low, 35.					
46	Providing and fixing 100mm vertical blinds of approved colour made from 100% polyester yarn coated with fade resistant polymer to ensure complete opaquity with zero light transmittance having suitable coating on exterior, including all fixtures and fittings complete in all respect as per design and instructions of the Engineer-in-charge	Sqm	24.00			
47	Proving and fixing of Table with Material & Subtype: Engineered Wood - Particle BoardDimension (L)1050mm X (D)510mm X (H)750 with Matte Finish. Durian Compton Workspace Desk or equivalent	Each	1.00			
48	Supply and fixing of medium	Each	7.00			

	back chairs. Durian Jordon Mesh chair or equivalent					
49	Making Core Cutting in walls / slabs / beams / retaining walls and any other R.C / Brick members to following dia & depth by using suitable machine with tolerance for any type of inserts, pipes etc. Rate shall include for all charge, preparation of surface, cutting of reinforcement, cleaning the surface, staging, scaffolding application with necessary tools and equipments wat(lr and power, removal of debris from the site.					
49.1	150mm to 250mm dia to the following depth:	Each	5.00			
50	Supply and fixing of approved quality 3 seater steel chair with wooden study table.	Each	10.00			
51	Proving and fixing of Table with Material & Subtype: Engineered Wood - Particle Board Dimension (L)1900mm X (D)900mm X (H)750mm with Matte Finish. Durian Turin Wooden Conference Desk or equivalent	Each	1.00			
52	Removing and reposition of existing aluminium windows approx. size of 2.65x1.75mts with MS grills. The work shall include removing of glaze from windows, removing aluminium sections/frames, refixing of windows to adjacent with necessary screws, refixing of new glaze, supply and fixing of rubber beading wherever required and all complete as per instruction of engineer-in charge.	Each	4.00			

53	Supply and fixing of 10'x4' green board with dust collector and duster & chalk holder. The board frame have anodized extruded Aluminium alloy hollow section of designation 63400 conforming to IS: 1285, back cover galvanized steel sheets conforming to IS:277, and all complete as per instruction of engineer-in charge.	Each	1.00			
54	Removing the old light fixtures / ceiling fans and kept in safe custody inside the campus wherever JIPMER instructed (with in JIPMER campus)	Each	95.00			
55	Supply of 600 X 600 mm recess mounted Square LED 36 W down light in die-cast aluminium housing including high efficiency diffuser provides soft glare free light, driver etc including all required mounting accessories complete.	Each	40.00			
56	Supplying and fixing following modular switch/socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required. Data socket (RJ-45)	Each	8.00			
57	Supply of the following size 1.1kV grade XLPE insulated PVC sheathed, armoured Aluminium conductor power cable					
57.1	3.5 core X 95 sq. mm	Metre	50.00			
57.2	3.5 core X 25 sq. mm	Metre	25.00			
58	Supply and Installation of main LT panel, floor mounted, front operated, dead back, totally enclosed vermin proof, outdoor, non- drawout, cubicle type power dist. panel	Each	1.00			

	<p>fabricated out of 2mm thick CRCA sheet having gasketed hinged door on each cubicle, fully powder coated, incorporating horizontal and vertical sleeved aluminium busbars 'complete with all internal wiring, danger board, two earthing lugs, cable chamber etc. as required</p> <p>Note :- GA & Control Drawing of the panel shall be approved by the consultant before fabrication. (Panel shall be manufactured from as per inspectorate rules.) All test certificates for Panel shall be submitted alongwith the delivery of Panel at site.</p> <p>(MAIN LT PANEL)</p> <p>Incomings :-</p> <p>1no., 215 A, 4 Pole MCCB Complete with neutral & accessories as incomer with O/L, E/F, S/C ,U/V ,Protections. Indicating Lamps for R,Y,B,ON/OFF and Breaker 'Auto Trip' ,Spring Charge & Trip Circuit Healthy Indicator. 1 No's of Load Manager with Voltmeter&Ammeter.</p> <p>Outgoing :</p> <p>3 Nos of 63 A, 4 Pole MCCB with complete with neutral and all accessories complete .</p>					
59	<p>Supply, installing, testing & commissioning of 20KVA ups 3 phase, 415V, 50HZ, 4 wire system in parallel with battery backup of 30 mins duration (2V "42" AH Sealed Maintenance Free (SMF) Battery) and with all standard fittings, accessories, protection, racks ,indications and controls including but not restricted to transformer, rectifier,inverter, necessary SMF battery with float cum boost battery charger, battery breaker, static bypass switch,output isolation</p>	Each	1.00			

	transformer,inter-connections etc. including warranty for 1 yrs after the date of handing over complete as per specification and as required.The quoted price shall inclusive of 20 mts suitable cables from battery to UPS. The price should include incoming encloser with necessary breakers. outgoing TPN DB along with necessary isolator, mcb, mccb and cabling etc, all complete.					
60	Supply, Installation, Testing, Commissioning of LED strip 22W along with drivers and all accessories, etc all complete (Havells FLEXION LED STRIP 22 W or equivalent)	Mtr	160.00			
61	Supply of 3W deep spot LED light including all required accessories complete. (Havells LHEEBCPFUN1W003 or equivalent)	Nos	68.00			
62	Removing of existing biometric device/CCTV system, and keping in safe custody, and refixing the same on wall panel with supplying and drawing wiring wherever required and installing, testing & commissioning and etc all complete. in coordination with existing vendor	Job	1.00			
63	Supply Installation, testing and commissioning of ultra short throw LCD projector 3200 ANSI lumens, WXGA (1200X800 PIXELS) 10000 hour lamp life and complete. EPSON EB-675Wi/Equal	Each	2.00			

64	Supply Installation, and commissioning of Motorised Projector Screen of size 9'x12' with all fixing accries.make: Alkosign/Abroad/Equal.	Nos.	2.00			
65	Supply Installation of 15m HDMI Male to Male Cable kit.	Each	3.00			
66	Supply Installation of 15m VGA Cable kit.	Each	3.00			
67	Supply Installation, testing and commissioning of wireless hand microphone. Make: AKG/Equal	Each	2.00			
68	VC: Supply Installation, testing and commissioning of VC System with SIP/H.323 Video Conferencing, Video Inputs: 2xHDMI, 2xUSB, Ethernet Ports: 2, Video outputs: 1x HDMI, 1x Display port, Audio inputs: Balanced audio, USB, Line in, Audio outputs: Balanced audio, Line out, HDMI, Video Characteristics: H.261, H.263, H.263+/++, H.264/AVC High Profile – up to 6Mbps, H.264/SVC (Skype for Business), PTZ Camera with 12xOptical Zoom, 73° wide-angle view with auto-focus, Full HD 1080p@60, Control: Remote control, USB , RS-232, RJ-45 Pan/Tilt Angles: ±170°, Tilt: -30° to +90°, Two Speakerphones daisy-chained together with HD Conference Audio Processing, Distributed Echo Cancellation, Audio Standards: 3.4KHz: G.711, G.723.1, G.728. G.729, 7KHz: G.722, G.722.1, 14KHz: G.722.1 Annex C, 20KHz: AAC-LD, Recording Formats: MP4,WMV, Unicast & Multicast Streaming. Make: Clearone Collaborate Live 600/ Equivalent	Nos.	1.00			

69	PTZ Camera: Supply Installation, testing and commissioning of PTZ Camera with 12xOptical Zoom, 73° wide-angle view with auto-focus, Full HD 1080p@60, Control: Remote control, USB , RS-232, RJ45, Pan/Tilt Angles: ±170°, Tilt: -30° to +90°. Make: Clearone Unite 200/ Equivalent	Nos.	1.00			
70	USB Cable: Supply and laying USB 3.0 Male to Male Extension Cable upto 30m for the PTZ Camera.	Nos.	1.00			
71	Supplying & Fixing of VC Camera Shelf	Nos.	2.00			
72	Supply Installation, testing and commissioning of 240W amplifier. Make: Bosch PLE-1ME240IN/Equal	Each	1.00			
73	Supply Installation, testing and commissioning of Yamaha MG16XU/Equal mixer.	Each	1.00			
74	Supply Installation, testing and commissioning of 22U rack of approved make.	Each	1.00			
75	Supply, Installation, Testing & Commissioning of modular type Variable Refrigerant Flow/Variable Refrigerant Volume aircooled Outdoor units suitable for cooling and heating, having all hermetically sealed inverter type Scroll Compressor(s), minimum two compressors for above 14HP modules, microprocessor based Controller, top discharge type condensing unit(s), with R410A Refrigerant, vibration isolators, with suitable foundation etc.complete as required. The unit shall deliver the rated capacity at AHRI Conditions and work					

	<p>even at 50°C ambient temperature without tripping. The unit shall be suitable to work on 400V+/-10%, 3Phase, 50Hz AC power supply. The unit shall be filled with first charge of the refrigerant and ready for use as required. The COP at AHRI conditions shall not be less than 3.1 and IEER not less than 6.5. The ODU's shall be provided suitable vibration isolators, and required Outdoor unit Connecting kit or Branch kit, complete as per the satisfaction of the engineer in charge. The rate shall include supply, Installation of outdoor unit control box near outdoor with necessary breakers and accessories for controlling the outdoor. Make and model have to be approved by the engineer in charge</p>					
75.1	40 HP	Nos	1.00			
76	<p>Supply, installation, testing and commissioning of following minimum capacity 4 – way flow VRV/VRF cassette type indoor ceiling mounted unit equipped with synthetic washable media pre-filter, fan section with low noise fan/dynamically balanced blower, multispeed motor, coil section with dx copper coil, electronic expansion valve, outer cabinet, drain pump, grill, necessary supports, vibration isolation, cordless remote control etc., suitable for operation on single phase 230v±10%, 50 hz ac supply, complete, as required. The unit shall have automatic force shutdown provision in case of fire on receiving signal from bms system. The cooling capacity of indoor</p>					

	unit will be at air inlet conditions of 27 Degree CD Band 19 Degree CWB temperature. The units shall have provision for Fresh air and extention duct connections with Decorative panels . Make and model have to be approved by the engineer in charge					
76.1	4TR	Nos	8.00			
77	Supply, installation, testing and commissioning, Transmission/Communication cabling, of copper cable of the required gauge thickness, as required for interconnecting the Indoor and Outdoor Units of all the VRV Units for proper performance, complete as per the satisfaction of the engineer in charge. Make and model have to be approved by the engineer in charge	Rmts	300.00			
78	Supply, Installation, testing and commissioning including vaccumiazation and Nitrogen testing of suitable nominal sizes of soft/hard drawn copper refrigerant piping for VRV/VRF system, complete with fittings, with suitable adjustable ring type hanger supports, jointing/brazing including accessories, insulated with XPLE Class-O tubular insulation/with Class-O closed cell elastometric nitrile rubber tubular sleeves sections of 19 mm thickness of required size for Suction and Liquid lines, all accessories as per specifications etc. as required	Rmts	300.00			
79	Supply, installation, testing and commissioning of special refrigerant connection refnet joint kits for taking branch connections to the various Indoor Units, as required, for the complete installation	Set	10.00			

	and proper functioning of the VRV system, complete as per the satisfaction of the engineer in charge. Make and model have to be approved by the engineer in charge					
80	Supply of Air Cooled High Wall mounted Split Air Conditioner of following capacities consisting of high wall mounted type room unit (fan coil) with cordless remote control, outdoor condensing unit comprising of energy efficient suitable rotary compressor for operation on single phase, 230 V, 50Hz supply, along with refrigerant copper piping with 13mm nitrile rubber insulation, comprising of 1" dia drain PVC pipe with thermal insulation upto ground floor level, canvas connections, full electrical cabling from power plug near indoor unit and to outdoor unit, outdoor unit MS stand, suitable stabilizer etc complete as required and breaking the wall and making good the same.					
80.1	2.00 TR minimum 3 star rated as per BEE(inclusive of stabilizer)	Each	1.00			
81	Supply and Installation of Flexible Duct for Connecting the VRV indoor unit & GI duct along with Fresh air Louvers of required size	Set	8.00			
82	Supply, Installation, testing and commissioning of suitable nominal sizes of drain piping for VRV/VRF system, complete with fittings, with suitable adjustable ring type hanger supports, jointing including accessories, insulated with XPLE Class-O tubular insulation/with Class-O closed cell elastometric nitrile	Mtr	160			

	rubber tubular sleeves sections of 13 mm thickness of required size all accessories as per specifications etc. as required					
83	Supply, installation, testing and commissioning of following types of extinguisher with provision of wall bracket (fixed with anchor fastner) or floor mounted.					
83.1	ISI marked (IS:15683) Fire Extinguisher, Carbon-di-oxide type capacity 4.5 Kg. Flat base including valve, discharge hose of not less than 10 mm dia, 1M long and complete in all respects including initial fill with CO2 gas conforming to IS:307-1966 filled to a filling rate of not more than 0.667 and wall suspension bracket	Nos	2.00			
83.2	ABC (Powder Type) Fire Extinguisher. In HP Mild Steel Cylinders ISI marked fitted with pressure indicating gauge, internal tube, squeeze lever type valve fully charged with ABC powder (Mono Ammonium Phosphate) pressured by Nitrogen complete in all respects including wall suspension bracket and confoming to IS:15683 4 Kg with pressure gauge squeeze grip type	Nos	2.00			
84	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :					

84.1	25 mm dia	Mtrs	90.00			
84.2	32 mm dia	Mtrs	60.00			
84.3	65 mm dia	Mtrs	17.00			
84.4	80 mm dia	Mtrs	25.00			
85	Providing, fixing, testing & commissioning of 15mm dia quartzoid bulb type sprinklers of rating 68 degree centigrade with required accessories :					
85.1	Pendent Sprinkler	Each	23.00			
85.2	Upright Sprinkler	Each	23.00			
86	Supplying, installation, testing & commissioning of sprinkler flexible pipe (UL Listed) of stainless steel complete with 15 NPT on reducer thread with maximum working pressure of 175 PSI test pressure of 875 PSI (Burst) with branch line (Inlet) 25mm NPT male thread to sprinkler head (Outlet) 15mm NPT female thread with reducer, nipple, 2 side brackets, center bracket, stockbar of following sizes complete as required.					
86.1	1200mm	Set	23.00			
Total Amount						
Add GST						
Grand Total Amount incl. of GST in Figures						
Grand total amount in words: Rupees						

END OF VOLUME - IV