

I.I.T KANPUR KOTAK SCHOOL OF SUSTAINABILITY					
ELECTRICAL WORKS					
S. No	DESCRIPTION	UNIT	QTY	RATE without GST	AMOUNT
1	WIRING				
1.1	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 class PVC conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.				
1.1.1	Group C	Point	1090	1286.00	1401740.00
1.2	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point (without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.				
1.2.1	Group C	Point	2211	752.00	1662672.00
1.3	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.				
1.3.1	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	Meter	3500	204.00	714000.00
1.3.2	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	Meter	5650	241.00	1361650.00
1.3.3	2 X 4 sq. mm + 1 X 4 sq. mm earth wire	Meter	8200	292.00	2394400.00
1.3.4	2 X 6 sq. mm + 1 X 6 sq. mm earth wire	Meter	67	384.00	25728.00
1.3.5	4 X 1.5 sq. mm + 2 X 1.5 sq. mm earth wire	Meter	5050	315.00	1590750.00
1.3.6	4 X 2.5 sq. mm + 2 X 2.5 sq. mm earth wire	Meter	9100	359.00	3266900.00
1.3.7	4 X 4 sq. mm + 2 X 4 sq. mm earth wire	Meter	12500	470.00	5875000.00
1.3.8	4 X 6 sq. mm + 2 X 6 sq. mm earth wire	Meter	887	661.00	586307.00
1.4	Supplying and drawing following sizes of FRLS PVC insulated copper conductor, single core cable in the existing surface/ recessed steel/ PVC conduit/Cable Tray as required.				
1.4.1	3 x 1.5 sq. mm	Meter	450	83.00	37350.00
1.4.2	3 x 2.5 sq. mm	Meter	750	128.00	96000.00
1.5	Supplying and fixing of following sizes 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.				
1.5.1	20 mm	Meter	350	112.00	39200.00
1.5.2	25 mm	Meter	1000	127.00	127000.00
1.5.3	32 mm	Meter	250	161.00	40250.00
1.5.4	40 mm	Meter	80	200.00	16000.00
1.6	Supplying and fixing metal box of following sizes (nominal size) on surface or in recess with suitable size of phenolic laminated sheet cover in front including painting etc. as required.				
1.6.1	100 mm X 100 mm X 60 mm deep	Each	50	183.00	9150.00
1.6.2	150 mm X 150 mm X 60 mm deep	Each	30	273.00	8190.00
1.6.3	200 mm X 250 mm X 60 mm deep	Each	15	410.00	6150.00
1.6.4	250 mm X 300 mm X 60 mm deep	Each	10	532.00	5320.00
1.7	Supplying and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.	Each	80	35.00	2800.00
1.8	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	Each	887	418.00	370766.00
1.9	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 2 Nos. 3 pin 5/6 A modular socket outlet and 2 Nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	Each	584	592.00	345728.00
1.10	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 A & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	Each	901	487.00	438787.00
1.11	Supplying and drawing co-axial TV cable RG-6 grade, 0.7 mm solid copper conductor PE insulated, shielded with fine tinned copper braid and protected with PVC sheath in the existing surface/ recessed steel/ PVC conduit as required.	Meter	473	41.00	19393.00
1.12	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.				
1.12.1	TV antenna socket outlet	Each	16	129.00	2064.00
1.12.2	Preterminated HDMI Socket - 1 Module	Each	6	5119.00	30714.00
1.13	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.				
1.13.1	1 or 2 Module (75 mmX75 mm)	Each	22	261.00	5742.00
1.14	SITC of factory assembled flush mount type modular socket outlet Box in silver colour extruded aluminium housing and with necessary panels should be able to rotate through 180 degree mechanically with push button functionality to easy rotation partially, panels and socket outlets should be made out of engineering plastic as per UL94 V0 and glass-fibre zips for easy fixing arrangement within cut-out dimension of : Length 418.6mm X Width 101.5mm & 2mm radius on corners -NetBox Turn Comfort 6 Gang, comprising of Wieland 20A Male Connector (Black) with 200mm tailing cable, 2 Nos. Switch in one gang, 2 Nos. 6/13A Universal Sockets (Certified as per BS5733), 1 No. No. USB A+C Type 30W Fast Charging Module with Output Voltage range 5V-20V, Output current 3A total, Input Voltage 100V-240V, Input current Max 0.45A at full load, Blanking Plate 1 No. for 1 Data outlet suitable for AMP-TYCO, D-Link or SYSTIMAX for direct termination of Cable and I/Os in to the Box, 1 No. USB Mini Cable with Female Connector at both ends. (Local Mini Cable not from included). (POP UP BOX-1)	Each	28	29957.00	838796.00
1.15	SITC of factory assembled flush mount type modular socket outlet Box in silver colour extruded aluminium housing and with necessary panels should be able to rotate through 180 degree mechanically with push button functionality to easy rotation partially, panels and socket outlets should be made out of engineering plastic as per UL94 V0 and glass-fibre zips for easy fixing arrangement within cut-out dimension of : Length 418.6mm X Width 101.5mm & 2mm radius on corners -NetBox Turn Comfort 6 Gang, comprising of Wieland 20A Male Connector (Black) with 200mm tailing cable, 2 Nos. Switch in one gang, 2 Nos. 6/13A Universal Sockets (Certified as per BS5733), 1 No. No. USB A+C Type 30W Fast Charging Module with Output Voltage range 5V-20V, Output current 3A total, Input Voltage 100V-240V, Input current Max 0.45A at full load, Blanking Plate 1 No. for 2Data/voice outlet suitable for AMP-TYCO, D-Link or SYSTIMAX for direct termination of Cable and I/Os in to the Box, 1 No. USB Mini Cable with Female Connector at both ends. (Local Mini Cable not included).(POP UP BOX-2)	Each	6	30031.00	180186.00
1.16	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.				
1.16.1	20 mm	Meter	500	195.00	97500.00
1.16.2	25 mm	Meter	1000	224.00	224000.00
1.16.3	32 mm	Meter	250	285.00	71250.00

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2	DISTRIBUTION BOARDS				
2.1	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)				
2.1.1	16 way, Double door	Each	12	2754.00	33048.00
2.1.2	12 way, Double door	Each	3	2029.00	6087.00
2.1.3	8 way, Double door	Each	25	2256.00	56400.00
2.2	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)				
2.2.1	8 way (4 + 24), Double door	Each	42	5232.00	219744.00
2.2.2	12 way (4 + 36), Double door	Each	33	7789.00	257037.00
2.3	Design, fabrication, assembling, wiring, supply, installation, testing & commissioning of VTPN type Distribution boards conforming to IS: 8623-1 & 3 suitable for MCCB incomer, made out of pre-treated and powder coated (minimum 60-80 micron), minimum 1.2mm thick sheet steel double door enclosure (IK 09), 500 V, mount on surface / recess, complete with centrally mount minimum 250A rated tinned copper insulated three phase busbar, common neutral bus bar, common earth bar, din bar including earthing stud etc. as required. The cost shall also include required blanking Plates, sticking saddles, cement spill protector, cable ties, circuit identification labels & laminated DB Detail chart as standard or as suggested by Architect/Consultant. (But without MCCB/MCB/RCCB/Isolator). (Note : Vertical type MCCB TPDB is normally used where 3 phase outlets are required.)				
2.3.1	8 way (MCCB + 24), Double door	Each	24	12775.00	306600.00
2.4	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.				
2.4.1	Single pole	Each	2560	224.00	573440.00
2.4.2	Double Pole	Each	28	575.00	16100.00
2.4.3	Triple Pole	Each	126	882.00	111132.00
2.5	Supplying and fixing single pole blanking plate in the existing MCB DB complete etc. as required.	Each	15	11.00	165.00
2.6	Supplying and fixing 40 A to 63 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.				
2.6.1	Double Pole	Each	14	1135.00	15890.00
2.6.2	Four Pole	Each	79	2179.00	172141.00
2.7	Supplying and fixing following rating, double pole, (single phase and neutral), 240 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.				
2.7.1	25A	Each	29	1778.00	51562.00
2.7.2	40A	Each	104	2316.00	240864.00
2.7.3	63A	Each	145	2386.00	345970.00
2.8	Supplying and fixing Cable End Box (Loose wire box)(IP 43) suitable for following single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with testing and commissioning etc. as required.				
2.8.1	For 8 way, Double door SPN MCBDB	Each	25	729.00	18225.00
2.8.2	For 14 way, Double door SPN MCBDB	Each	15	790.00	11850.00
2.9	Supplying and fixing Cable End Box (Loose wire box)(IP 43) suitable for following triple pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with testing and commissioning etc. as required.				
2.9.1	For 8 way, Double door TPN MCBDB	Each	42	1174.00	49308.00
2.9.2	For 12 way, Double door TPN MCBDB	Each	33	2790.00	92070.00
2.10	Supplying and fixing 20 A, 240 V, SPN Industrial type socket outlet, with 2 pole and earth, metal enclosed plug top alongwith 20 A, "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	17	1421.00	24157.00
2.11	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.				
2.11.1	63 A	Each	3	2518.00	7554.00
2.12	Design, fabrication, assembling, wiring, supply, installation, testing & commissioning of (IP:30, IK 08) minimum 1.2mm thick sheet steel FP RCCB enclosure conforming to IS: 8623-1 & 3 & IEC 61439- 1&3, made out of pre-treated and powder coated (minimum 60-80 micron), 240/415 V, mount on surface / recess, complete with din bar including earthing stud etc. as standard or as suggested by Architect/Consultant. (For Lift)	Each	3	766.00	2298.00
2.13	Supplying and fixing 30 A, 415 V, TPN Industrial type socket outlet, with 4 pole and earth, metal enclosed plug top alongwith 30 A, "C" curve, TPMCB, 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	50	3601.00	180050.00
2.14	Providing and fixing following rating and breaking capacity and pole MCCB with thermomagnetic release and terminal spreaders in existing cubicle panel board including drilling holes in cubicle panel, making connections, etc. as required.				
2.14.1	125 A, 16 kA,TPMCCB (For VTPN DB Incomer Breaker)	Each	25	4227.00	105675.00
3	SUPPLY OF LIGHT FIXTURES AND FANS				
	Note:-The model numbers specified below are only for references for Shape of the product requirement. The product shall supplied, must match the technical specifications. The technical data sheets shall be arranged before the material dispatch and got approved from engineer-in- charge.				
3.1	Supply of DALI dimmable Integral, SMD 2x2 Backlit LED Panel, IP 20, 30W LED recessed mounted fixture with system efficacy of minimum 130lm/W and system lumen output of minimum 3900lm, operating in ambient temperature of 0°C to 45°C at 50Hz frequency. Luminaire shall have CRCA housing coated in white (RAL9016) with prismatic diffuser for UGR rating < 19 as per CIE 117-1995. LEDs used in the product shall comply with IEC 62471. LM 80-08 compliant LEDs from reputed makes such as Nichia/Cree/ Bridgelux/ Lumiled/ Osram/Seoul should be provided. The LED shall comply with L70 life of 50000 burning hours tested at maximum current. The LEDs used should be with CCT of 4000/5700K and CRI of Minimum 90. LED Driver shall be Isolated type, Constant Current topology driver with proper heat sink for heat dissipation suitable to operate in input voltage range of 150V to 270V (nominal rated voltage – 240V) with 4KV internal surge protection, Power factor of minimum 0.95 and total harmonic distortion (THD) of less than or equal to 10% should be integral to the luminaire. Manufacturer shall have inhouse lab approved by NABL or ministry of science of govt of India. LM 79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Compliance to Indian Standards of IS10322 Part 5 / Sect 5:1967; 16105 : 2012; IS 16106 : 2012; IS 15885 (Part2/Sec13) : 2012; IS 16108 : 2012.	Each	42	7424.00	311808.00

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3.2	Supply of 30W, suspended by 1.5m suspension wire, 4 feet linear, IP20, SMD LED luminaire with system efficacy of 125 lumen/watt and system lumen output of 3750 lumen, operating in an ambient temperature of 0°C to 45°C. Operating at 50Hz frequency, luminaire shall have extruded aluminium housing in white with high efficiency prismatic diffuser for UGR<19 and must have provision for end to end seamless connectivity. EMC package of wattage of 0.2-0.5 W LEDs used in the product shall comply with IEC 62471 for Photo-biological safety. LM 80-08 compliant LEDs from reputed makes such as Nichia/Cree/ Bridgelux/ Lumiled/ Osram/Seoul should be provided. The LED shall comply with L70 life of 50000 burning hours tested at maximum current. The LEDs used should be with CCT of 4000/5700 K and CRI of Minimum 90, with MacAdam CCT binning ≤3 mounted on 1.6mm FR4 / MCPCB with 35 micron cu layer. LED Driver shall be Isolated type, Constant Current topology driver with proper heat sink for heat dissipation suitable to operate in input voltage range of 140V to 300V (nominal rated voltage – 240V) with 3KV internal surge protection, Power factor of minimum 0.95, driver efficacy of minimum 85% and total harmonic distortion (THD) of less than or equal to 10% should be integral to the luminaire. Manufacturer shall have inhouse lab approved by NABL or ministry of science of govt of India. LM 79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Compliance to Indian Standards of IS10322 Part 5 / Sect 5:1967; 16105 : 2012; IS 16106 : 2012; IS 15885 (Part2/Sec13) : 2012; IS 16108 : 2012	Each	959	5343.00	5123937.00
3.3	Supply of DALI dimmable 30W, suspended by 1.5m suspension wire, 4 feet linear, IP20, SMD LED luminaire with system efficacy of 125 lumen/watt and system lumen output of 3750 lumen, operating in an ambient temperature of 0°C to 45°C. Operating at 50Hz frequency, luminaire shall have extruded aluminium housing in white with high efficiency prismatic diffuser for UGR<19 and must have provision for end to end seamless connectivity. EMC package of wattage of 0.2-0.5 W LEDs used in the product shall comply with IEC 62471 for Photo-biological safety. LM 80-08 compliant LEDs from reputed makes such as Nichia/Cree/ Bridgelux/ Lumiled/ Osram/Seoul should be provided. The LED shall comply with L70 life of 50000 burning hours tested at maximum current. The LEDs used should be with CCT of 4000/5700 K and CRI of Minimum 90, with MacAdam CCT binning ≤3 mounted on 1.6mm FR4 / MCPCB with 35 micron cu layer. LED Driver shall be Isolated type, Constant Current topology driver with proper heat sink for heat dissipation suitable to operate in input voltage range of 140V to 300V (nominal rated voltage – 240V) with 3KV internal surge protection, Power factor of minimum 0.95, driver efficacy of minimum 85% and total harmonic distortion (THD) of less than or equal to 10% should be integral to the luminaire. Manufacturer shall have inhouse lab approved by NABL or ministry of science of govt of India. LM 79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Compliance to Indian Standards of IS10322 Part 5 / Sect 5:1967; 16105 : 2012; IS 16106 : 2012; IS 15885 (Part2/Sec13) : 2012; IS 16108 : 2012.	Each	40	8131.00	325240.00
3.4	Supply of DALI dimmable IP20 linear suspended standalone fitting made of extruded aluminium housing and is should have high efficiency prismatic diffuser for UGR<19. Fixture should have minimum efficacy at System level (Not Chip Level) >125lumens/watt(SDCM<3) and a minimum system lumen output of 1875 (downlight) lumens and maximum system wattage of 15W. Luminaire should have Life of 50,000hrs@L70 Lumen maintenance at 45deg C ambient temperature, CCT up to 4000/5700K, IP20, IK02, CRI >90, PF >0.95, THD<10% at full load and an operating Voltage Range of 140 - 300V AC, Internal Surge Protection 3KV & driver efficacy >80%. The fixture should comply with the parameters as per IS10322. Fixture should have class I indulation. Manufacturer shall have inhouse lab approved by NABL or ministry of science of govt of India. LM 79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Including 3 core 1.5 sq.mm.	Each	8	7945.00	63560.00
3.5	Supply of SMD LED, IP 40, 12W Recessed downlighter with System efficacy of 120lm/W and system lumen output 1440 lumen, operating in an ambient temperature of 0°C to 45°C at 50Hz frequency. Luminaire shall have aluminium pressure die cast housing in white with high transmittivity diffuser for uniform illumination and reduced glare. EMC/PCT package of wattage of 0.5-1 W LEDs used in the product shall comply with IEC 62471 for Photo-biological safety. LM 80-08 compliant LEDs from reputed makes such as Nichia/Cree/ Bridgelux/ Lumiled/ Osram/Seoul should be provided. The LED shall comply with L70 life of 50000 burning hours tested at maximum current. The LEDs used should be with CCT of 4000/5700 K and CRI of Minimum 90, with MacAdam CCT binning <3 mounted on 1.6mm MCPCB/FR4 with 35 micron cu layer. LED Driver shall be external, Isolated type, Constant Current topology driver with proper heat sink for heat dissipation suitable to operate at nominal rated voltage of 240V with 2.5kV internal surge protection, Power factor of minimum 0.95, driver efficacy of minimum 85%, and total harmonic distortion (THD) of less than or equal to 10% should be integral to the luminaire. Manufacturer shall have inhouse lab approved by NABL or ministry of science of govt of India. LM 79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Compliance to Indian Standards of IS10322 Part 5 / Sect 5:1967; 16105 : 2012; IS 16106 : 2012; IS 15885 (Part2/Sec13) : 2012; IS 16108 : 2012. Luminaire Dimension : 125 mm dia, 34 mm height ; cut-out dimension : 110 mm	Each	242	2648.00	640816.00
3.6	Supply of DALI dimmable SMD LED, IP 40, 15W Recessed downlighter with System efficacy of 120lm/W and system lumen output 1800 lumen, operating in an ambient temperature of 0°C to 45°C at 50Hz frequency. Luminaire shall have aluminium pressure die cast housing in white with high transmittivity diffuser for uniform illumination and reduced glare. EMC/PCT package of wattage of 0.5-1 W LEDs used in the product shall comply with IEC 62471 for Photo-biological safety. LM 80-08 compliant LEDs from reputed makes such as Nichia/Cree/ Bridgelux/ Lumiled/ Osram/Seoul should be provided. The LED shall comply with L70 life of 50000 burning hours tested at maximum current. The LEDs used should be with CCT of 4000/5700 K and CRI of Minimum 90, with MacAdam CCT binning <3 mounted on 1.6mm MCPCB/FR4 with 35 micron cu layer. LED Driver shall be external, Isolated type, Constant Current topology driver with proper heat sink for heat dissipation suitable to operate at nominal rated voltage of 240V with 2.5kV internal surge protection, Power factor of minimum 0.95, driver efficacy of minimum 85%, and total harmonic distortion (THD) of less than or equal to 10% should be integral to the luminaire. Manufacturer shall have inhouse lab approved by NABL or ministry of science of govt of India. LM 79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Compliance to Indian Standards of IS10322 Part 5 / Sect 5:1967; 16105 : 2012; IS 16106 : 2012; IS 15885 (Part2/Sec13) : 2012; IS 16108 : 2012. Luminaire Dimension : 125 mm dia, 34 mm height ; cut-out dimension : 110 mm	Each	45	5552.00	249840.00

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3.7	Supply of suitable for general lighting surface downlighter made of Pressure die cast aluminium suitable for general lighting. Luminaire should have die cast heat sink with polycarbonate cover. The luminaire should have CRI > 90 and CCT of 4000/5700K, SDCM<3 as per ANSI Bin C78.377A. The luminaire shall be compliant with IP40 classification. The fixture should have a minimum system efficacy of 120 lumen/Watt and a minimum system lumen output of 1800 lumens and maximum system wattage of 15Watts. The luminaire shall be designed so as to ensure lumen depreciation of up to 30% over 50k burning hours @ design ambient temp 45 deg C. The isolated constant current electronic driver used shall have a power factor >0.95@full load , THD <10%, Surge protection 2.5KV, Operating voltage range: 100-265V AC, Fixture should have class I indulation. The fixture should comply with the parameters as per IS10322. Manufacturer shall have inhouse lab approved by NABL or ministry of science of govt of India. LM 79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Including 3 core 2.5 sq.mm FRLS PVC insulated and PVC sheathed copper conductor cable and earthing etc. upto suitable point complete as required. Dimensions: Ø152x71mm (±2mm), Weight should not be more than 0.45Kg.	Each	143	3020.00	431860.00
3.8	Supply of 15W surface mount, Fokus+ deep inset COB LED Downlight luminaire having 1350 lumens with dimensions of 87mm x 87mm and height of 181mm. Luminaire shall be made up of pure polyster powder coated pressure die cast Aluminium housing with inbuilt heat sink to provide better thermal management to enhance LED life. The luminaire should be equipped with the secondary optics of high efficiency polycarbonate lens to provide UGR < 19. The luminaire should have beam angle of 70°. LM 80-08 compliant ceramic / aluminium base LEDs from reputed makes such as Nichia/Cree/ Bridgelux/ Lumiled/ Osram/Citizen should be provided. LEDs used in the product shall comply with EN 62471 for Photo-biological safety and certificate for the same from manufacturer shall be provided. The luminaire should be IP20 rated. The LED shall be compliant with LM80-08 standard with L70 life of 50000 Hrs tested at maximum current (Complete LM 80 test report for LED should be submitted for 10000 hrs of testing). The LEDs used should be with CCT of 4000/5700 K and CRI of Minimum 90. LED Driver shall be IP20 rated, integrated type, Isolated, Constant Current operated driver with range 100-265V AC. Driver Efficiency > 84% & 2.5 KV internal surge protection, Power factor greater than 0.95 and total harmonic distortion (THD) of less than 10% should be integral to the luminaire. Manufacturer shall have inhouse lab approved by NABL or ministry of science of govt of India. LM 79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Compliance to Indian Standards of IS10322 Part 5 / Sect 5:1967; 16105 : 2012; IS 16106 : 2012; IS 15885 (Part2/Sec13) : 2012; IS 16108 : 2012.	Each	548	6049.00	3314852.00
3.9	Supply of surface/wall mounted SMD LED bulkhead luminaire of 10W LED fixture with System efficacy of 100 lm/W and 1000 system lumens, operating in ambient temperature of 0°C to 45°C at 50Hz frequency . Luminaire shall be made up of pressure die cast aluminium housing powder coated in dark gray with polycarbonate high transmissivity opal diffuser, ensuring uniform illumination and excellent heat dissipation. LEDs used in the product complies with IEC 62471 for Photo-biological safety. Luminaire is with high quality silicon gasket of IP65 and IK10 protection . EMC/PCT package of wattage of 1-3 W LEDs used in the product shall comply with IEC 62471 for Photo-biological safety. LM 80-08 compliant LEDs from reputed makes such as Nichia/Cree/ Bridgelux/ Lumiled/ Osram/Seoul should be provided. The LED shall comply with L70 life of 50000 burning hours tested at maximum current .The LEDs used shall be with CCT of 5700 K and CRI of minimum 80, with MacAdam CCT binning < 7 mounted on 1 mm MCPCB with 35 micron cu layer. LED Driver shall be of Integrated type prewired in product housing, Isolated, Constant Current with range 140-280V AC with internal surge protection of 2.5kV. Driver of Efficiency > 80%, Power factor of minimum 0.95 and total harmonic distortion (THD) of less than or equal to 10% shall be integral to the luminaire. Manufacturer shall have inhouse lab approved by NABL or ministry of science of govt of India. LM 79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Compliance to Indian Standards of IS10322 Part 5 / Sect 5:1967; 16105 : 2012; IS 16106 : 2012; IS 15885 (Part2/Sec13) : 2012; IS 16108 : 2012.	Each	26	1073.00	27898.00
3.10	Supply of IP20 linear suspended standalone/continuous fitting made of extruded aluminium housing with white powder coating and is should have Microstructured antilglare optical lens. Fixture should have minimum efficacy at System level (Not Chip Level) >120lumens/watt(SDCM<3) and a minimum system lumen output of 2400 (downlight) lumens and maximum system wattage of 20W and Beam angle 60-65deg, sheilding angle should be greater than 65deg. Fixture should have office complaiance i.e UGR<16. Luminaire should have Life of 50000hrs@L70B0 Lumen maintenance at 45deg C ambient temperature, CCT up to 4000/5700K, IK02, CRI >90, PF >0.95, THD<10% at full load, EMC/EMI compliance and an operating Voltage Range of 150 - 270V AC & Internal Surge Protection 3KV. The fixture should comply with the parameters as per IS10322. Manufacturer shall have inhouse lab approved by NABL or ministry of science of govt of India. LM 79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Including 3 core 1.5 sq.mm. Dimensions: 1104x53x85mm (±2mm), Wight 2.6Kg.	Each	7	9190.00	64330.00
3.11	Supply of 20W COB LED Downlight luminaire having 1400 lumens, cut-out (Φ) dia of 74mm and height of 175mm, suitable for surface mounting. Luminaire shall be made up of black powder coated extruded Aluminium housing with silver trim and inbuilt heat sink to provide better thermal management to enhance LED life. The luminaire should be equipped with the secondary optics of high efficiency reflector with clear glass to have precise light beam. LM 80-08 compliant LEDs from reputed makes such as Nichia/Cree/ Bridgelux/ Lumiled/ Osram/Seoul should be provided. LEDs used in the product shall comply with EN 62471 for Photo-biological safety and certificate for the same from manufacturer shall be provided. The luminaire should be IP20 rated. The LED shall be compliant with LM80-08 standard with L70 life of 50000 Hrs tested at maximum current (Complete LM 80 test report for LED should be submitted for 10000 hrs of testing). The LEDs used should be with CCT of 4000/5700K and CRI of Minimum 90. LED Driver shall be Integrated type, Isolated, Constant Current operated driver with range 140-280V AC. Driver Efficiency > 85% & 3 KV internal surge protection, Power factor greater than 0.95 and total harmonic distortion (THD) of less than 10% should be integral to the luminaire. Manufacturer shall have inhouse lab approved by NABL or ministry of science of govt of India. LM 79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Compliance to Indian Standards of IS10322 Part 5 / Sect 5:1967; 16105 : 2012; IS 16106 : 2012; IS 15885 (Part2/Sec13) : 2012; IS 16108 : 2012.	Each	595	4173.00	2482935.00
3.12	Supply of 2ft length, 10W LED Mirror luminaire wall mounted delivering minimum system lumen of 1000 lumens & the luminaire shall be with system efficacy 100 lm/W. The luminaire Housing shall be made of extruded aluminium & the diffuser shall be of PMMA/PC. The operating CCT shall be 4000K with CRI of ≥80, SDCM<5. The luminaire shall be with BIS Registered electronic driver with input voltage range of 150 to 270V , THD ≤ 10% & PF ≥ 0.95. LED Life with L70 Criteria should be 50,000 hours. IP20 protection. The LED Driver shall be easily available in India for repair and service. The LED shall be SMD type. Luminaire shall have minimum surge protection of 2.5KV. The luminaire shall be with following certifications: LM79 & LM80 issued by LED manufacture along with Photo Biological Safety Standard.	Each	69	828.00	57132.00

S. No	DESCRIPTION	UNIT	QTY	RATE without GST	AMOUNT
3.13	Supply of 10W Wall mounted LED decorative round Light delivering minimum system lumen of 1000 lm & the luminaire shall be with system efficacy ≥ 100 lm / W. Housing & Rim is Pressure Die Cast Aluminium, IP65, Optics: Polycarbonate Opal high transmissive Diffuser, Ambient temp 45deg C . The operating CCT shall be 4000/5700K with CRI of ≥ 80 . The luminaire shall be BIS Registered with electronic driver with input voltage range of 150 to 270V , THD $\leq 10\%$ & PF ≥ 0.95 , 50,000 Hrs luminaire Life with L70 Criteria. Shall have minimum surge protection of 2.5KV. The LED Driver shall be easily available in India for repair and service. The LED shall be SMD type. The luminaire shall be with following certifications: LM79 & LM80 issued by LED manufacturer along with Photo Biological Safety Standard. It should have Electrical class I insulation. Dimension: Ø180 X 60mm, Weight: 0.50Kg.	Each	23	1960.00	45080.00
3.14	Supply of 4 feet, ceiling or wall mounted, SMD LED batten of 32W LED luminaire with System efficacy of 140lm/W and 4480 system lumens, operating in ambient temperature of 0°C to 45°C . Luminaire shall be made up of extruded anodised aluminium housing with polycarbonate high transmissivity diffuser, ensuring uniform illumination glare free lighting, excellent heat dissipation, high durability, scratch resistance and non-rusting features. LEDs used in the product complies with IEC 62471 for Photo-biological safety. With screwless design, luminaire is with IP40 and IK06 protection with stainless steel mounting clamps. LM 80-08 compliant LEDs from reputed makes such as Nichia/Cree/ Bridgelux/ Lumiled/ Osram/Seoul should be provided. The LED shall comply with L70 life of 50000 burning hours tested at maximum current .The LEDs used shall be with CCT of 5700 K and CRI of minimum 90, with MacAdam CCT binning < 5 . Luminaire shall have FR4 PCB and its LED Driver shall be of Integrated type prewired in product housing, Isolated, Constant Current with range 150-270V AC with internal surge protection of 4kV and with Auto Cutoff protection for higher and lower input voltage and 350V Withstand for 8 Hours. Driver of Efficiency $> 85\%$, Power factor of minimum 0.95 and total harmonic distortion (THD) of less than or equal to 10% shall be integral to the luminaire. Manufacturer shall have inhouse lab approved by NABL or ministry of science of govt of India. LM 79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Compliance to Indian Standards of IS10322 Part 5 / Sect 5:1967; 16105 : 2012; IS 16106 : 2012; IS 15885 (Part2/Sec13) : 2012; IS 16108 : 2012.	Each	332	3929.00	1304428.00
3.15	Supply of suspended round shaped LED Ring of dia Ø1200mm. Fixture to be made of extrusion Aluminum housing in white finish with HET plastic diffuser. LED Used shall be SMD type with Minimum system Lumens 5400lm @60W & efficacy 90lm/W, IP20, Life of LED : 50000 burning Hrs. @ L70B0 Lumen maintenance, CCT of 4000/5700K (SDCM ≤ 3), CRI Ra ≥ 90 , PF > 0.95 , operating Voltage Range of 140-300 V AC. Minimum Internal Surge Protection 2.0KV. Manufacturer shall have inhouse lab approved by NABL or ministry of science of govt of India. LM 79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Both the fixture and Driver should have separate BIS approval.	Each	58	32719.00	1897702.00
3.16	Supply of wireless IoT System having BLE 5.2 AES 128 Bit encryption based 32 child DALI controller and analog 2 channel (0-10V) output, operates on 100-277 VAC, 10-30mA, 50Hz, DALI 2.0 protocol. Sensor input of 0-3V DC & 1mA. For analog dimming, It provides output voltage of 0-10V DC +/- 0.2V and 15mA per channel. For DALI output, it provides 12-20V DC and 160mA max for 32 DALI devices. An auxillary power output of 3.3VDC and 30mA. 0 - 100% dimming, device to device range 45m. Controller must control individually control standard DALI or Tunable DALI Drivers independantly or combination of both. Operating temperature -20 to 50 deg celsius, surge protection 3kV. System shall support easy commissioning and configuration via Mobile Application along with user and site management features. Optional Cloud Application must be available for control and monitoring of the devices along with analytics reports. Mobile Application shall have features of individual & group control for On/off/dimming/ colour tuning / Scene Control / Animation etc. Device must have security key for commissioning and replacement for future.	Each	6	21247.00	127482.00
3.17	Supply,Installation,Testing and Commissioning of wireless IoT System having BLE 5.2 AES 128 Bit encryption based 4 child DALI controller, operates on 90-277 VAC, 65mA, 50Hz, following DALI 2.0 protocol. It must have auxillary power output of 12V DC & 100mA to power sensor devices & 8mA current connected to 4 DALI drivers, 0 - 100% dimming, device to device range 45m. Controller must individually control standard DALI or Tunable DALI Drivers independantly or combination of both. Operating temperature -20 to 50 deg celsius, surge protection 4kV. System shall support easy commissioning and configuration via Mobile Application along with user and site management features. Optional Cloud Application must be available for control and monitoring of the devices along with analytics reports. Mobile Application shall have features of individual & group control for On/off/dimming/ colour tuning / Scene Control / Animation etc. Device must have security key for commissioning and replacement for future.	Each	2	6976.00	13952.00
3.18	Supply, Installation, Testing and Commissioning of WiFi and BLE 5.2 AES 128 Bit encryption Gateway with Ethernet and built-in Real Time Clock for cloud connectivity and scheduling. It is powered by 5V, 2A Mini USB / DC Adaptor and has 1 ethernet port with 10/100 Mbps data transmission rate. RTC is battery powered with 3V DC. Device to device range 30m X 30m, operating ambient temperature of -20 to 55 deg celsius. System shall support easy commissioning and configuration via Mobile Application along with user and site management features. Optional Cloud Application must be available for control and monitoring of the devices along with analytics reports. Device must have security key for commissioning and replacement for future.	Each	5	32134.00	160670.00
3.19	Supply, Installation, Testing and Commissioning of BLE 5.2 AES 128 Bit encryption based multi sensing device with low bay PIR and ambient light (0-2000 lux) sensing, with two 0-10V DC channels to control CCT and intensity. Operates on input voltage of 12-20 V DC with input current of 30mA at 12VDC and 25mA at 24VDC, 50Hz. Output is a 2 channel, 0-10V DC with 15mA current. Ceiling mounting height is 2.4m - 3m and maximum detection range is 10m dia at 3m mounting height. Device to device range 45m, operating temperature -20 to 50 deg celsius. System shall support easy commissioning and configuration via Mobile Application along with user and site management features. Optional Cloud Application must be available for control and monitoring of the devices along with analytics reports. Mobile Application shall have features of commissioning of the sensors along with setting step dim function, sensitivity levels and time day options. Device must have security key for commissioning and replacement for future. Device must have security key for commissioning and replacement for future.	Each	3	6164.00	18492.00
3.20	Supply, Installation, Testing and Commissioning of BLE 5.2 AES 128 Bit encryption based, AC Powered Wireless PIR Motion & Light Sensor (0-2000 lux). Operates on input voltage of 90-277 V AC with input current of 9mA at 230VAC and 15mA at 90VAC, 50Hz. Ceiling mounted with maximum height of 4m and maximum detection range of 14m dia at 4m mounting height. Device to device range 45m, operating temperature 0 to 80 deg celsius, surge rating 4kV. System shall support easy commissioning and configuration via Mobile Application along with user and site management features. Optional Cloud Application must be available for control and monitoring of the devices along with analytics reports. Mobile Application shall have features of commissioning of the sensors along with setting step dim function, sensitivity levels and time day options. Device must have security key for commissioning and replacement for future. Device must have security key for commissioning and replacement for future.	Each	5	10360.00	51800.00

S. No	DESCRIPTION	UNIT	QTY	RATE without GST	AMOUNT
3.21	Supply, Installation, Testing and Commissioning of BLE 5.2 AES 128 Bit encryption based wireless battery powered 5-button wall switch that controls ON/OFF, intensity and CCT of an individual or group of luminaires. Operates on 3V DC input voltage in an ambient temperature of 0 to 50 deg celsius and device to device range 45m. System shall support easy commissioning and configuration via Mobile Application along with user and site management features. Optional Cloud Application must be available for control and monitoring of the devices along with analytics reports.	Each	3	9480.00	28440.00
3.22	Supply, Installation, Testing and Commissioning of BLE 5.2 AES 128 Bit encryption based wireless battery powered 8-button wall switch that controls ON/OFF, intensity and CCT of an individual or group of luminaires and scene setting. Operates on 220-240V AC input voltage in an ambient temperature of 0 to 50 deg celsius and device to device range 45m. System shall support easy commissioning and configuration via Mobile Application along with user and site management features. Optional Cloud Application must be available for control and monitoring of the devices along with analytics reports.	Each	3	20158.00	60474.00

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3.23	Supply, Installation, Testing and Commissioning of 35W LED Decorative Post Top type luminaire with System efficacy of 100 lm/W (3500 lumens), suitable for external poles of dia. 65mm to 75mm. Luminaire shall be made up of pure polyster power coated RAL7021 pressure die cast Aluminium housing with Polycarbonate Fresnel lens of symmetrical or street optics of same make. All external hardware must be of SS304 grade. LM 80-08 compliant LEDs of EMC/ceramic package from reputed makes such as Nichia/Cree/ Bridgelux/ Lumiled/ Osram/Seoul should be provided. LEDs used in the product shall comply with EN 62471 for Photo-biological safety and certificate for the same from manufacturer shall be provided. Luminaire shall be with IP66 and IK07 protection. The LED shall be compliant with LM80-08 standard with L70 life of 50000 Hrs tested at maximum current (Complete LM 80 test report for LED should be submitted for 10000 hrs of testing). The LEDs used should be with CCT of 4000 K, CRI of Minimum 70 and SDCM <5. LEDs must be driven at max 70% of the rated current. MCPCB with Aluminium core and copper thickness of 35 micron to be used for LED mounting. LED Driver shall be silicone potted, Integrated type, Isolated, Constant Current with range 150-300V AC. Driver Efficiency > 85% & 4 KV internal surge protection, Power factor greater than 0.95 and total harmonic distortion (THD) of less than 10% should be integral to the luminaire. Manufacturer shall have inhouse lab approved by NABL or ministry of science of govt of India. Item should have Dark Sky Certification to avoid skyglow. LM79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Compliance to Indian Standards of IS10322 Part 5 / Sect 5:1967; 16105 : 2012; IS 16106 : 2012; IS 15885 (Part2/Sec13) : 2012; IS 16108 : 2012 should be there. Post Top, light fixture should have dark sky certification to avoid unnecessary sky glow and light pollution.	Each	60	15236.00	914160.00
3.24	Supply, Installation, Testing and Commissioning of 80W SMD LED Streetlight fixture with System efficacy of 115 lm/W (9200 lumens). Luminaire shall be made up of pure polyster powder coated die cast Aluminium housing with high purity IP66 PC lens without any glass cover, of single module of same make. The luminaire should be in square shape with diemson 193mm x 193mm x 81mm ± 2mm with a linear driver compartment placed on top having length of 279mm ± 2mm. It should not weigh more than 2.5 Kg ± 0.2 Kg. The housing should be made of LM6/ADC12 Alloy, non-corrosive Single Piece pressure die-cast aluminum, to withstand extreme environments. All external hardware must be of SS304 grade. The name of the brand should be embossed/engraved & should not be mentioned using sticker/screen printing. Luminaire shall be designed with street optic LENS for uniform light distribution. Maximum LENS dome top temperature shall be less than 95°C at 45°C ambient temperature. LM 80-08 compliant LEDs of EMC/ceramic package of wattage of 4W-5W from reputed makes such as Nichia/Cree/ Bridgelux/ Lumiled/ Osram/Seoul should be provided. LEDs used in the product shall comply with EN 62471 for Photo-biological safety and certificate for the same from manufacturer shall be provided. Luminaire shall be with IP66 and IK10 protection. The LED shall be compliant with LM80-08 standard with L70 life of 50000 Hrs tested at maximum current (Complete LM 80 test report for LED should be submitted for 10000 hrs of testing). The LEDs used should be with CCT of 5700 K, CRI of Minimum 70 and SDCM of < 5. LEDs must be driven at max 70% of the rated current. MCPCB with Aluminium core and copper thickness of 35 micron to be used for LED mounting. LED Driver shall be silicone potted, Integrated type, Isolated, Constant Current with range 150-300V AC. Driver Efficiency > 85% & 6 KV internal surge protection along with external SPD of 10 KV mounted inside the streetlight and firmly fixed to the housing. Power factor greater than 0.95 and total harmonic distortion (THD) of less than 8% should be integral to the luminaire. LED Driver must have short circuit, open circuit, Auto cut-off protection for low and high input voltage. Driver must have 440V input voltage protection for 8 hours. Driver must be of die cast / extruded Aluminium casing. Manufacturer shall have inhouse lab approved by NABL or ministry of science of govt of India. LM 79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Compliance to Indian Standards of IS10322 Part 5 / Sect 3:2013; 16105 : 2012; IS 16106 : 2012; IS 15885 (Part2/Sec13) : 2012; IS 16108 : 2012. BUG Rating of 80W streetlight is B2-U1-G2. Glare protected. Approved Make: Wipro LR08 or equivalent as per approved list of make	Each	50	7129.00	356450.00
3.25	Supply, Installation, Testing and Commissioning of LED based bollard of squared cross section (120 X 120mm), housing made up of extruded aluminium, sturdy and embossed brand name/logo name of manufacturer and optics made of milky white PC diffuser with pattern. The fixture should have a minimum system efficacy of 55lumen/Watt and a minimum system lumen output of 850 lumens and minimum system wattage of 15Watts. The fixture shall have a CRI of minimum 80. The fixture shall be designed for a system life of 50,000 hours @70% lumen maintenance. Ingress Protection of IP65 (lamp and gear Compartment) and Mechanical Impact Resistance Rating of IK10, CCT: 4000K. The fixture driver should have an operating voltage range of 140-280 V, surge protection of >=3KV, external surge protection 10KV, PF >0.95, THD<10% & Driver efficacy >80% @full load and rated voltage. Ambient temp range: 0deg to 45deg C. The Drivers should be a potted driver not a printed circuit board without casing, mounted inside the luminaire. The fixture should comply with the parameters as per IS10322. Manufacturer shall have inhouse lab approved by NABL . LM 79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Height: 800mm & Weight including all accessories should not be more than 2.2Kg.	Each	60	14368.00	862080.00
3.26	Supply, Installation, Testing and Commissioning of LED based Spike light, housing made up of pressure die cast aluminium Alloy with effective thermal management, sturdiness and embossed brand name/logo name of manufacturer and optics made of surface mount reflector with toughened. The fixture should have a minimum system efficacy of 80lumen/Watt and a minimum system lumen output of 640 lumens and maximum system wattage of 8 Watts. The fixture shall have a CRI of minimum 80 and beam angle: 50-55deg. The fixture shall be designed for a system life of 50,000 hours @70% lumen maintenance. Ingress Protection of IP67 (lamp and gear Compartment) and Mechanical Impact Resistance Rating of IK >=07, CCT: 2700K. The fixture driver should have an operating voltage range of 100-270 V, surge protection of >=3KV, PF >0.9, THD<10% & Driver efficacy >80% @full load and rated voltage. Ambient temp range: 0deg to 45deg C. The Drivers should be a potted driver not a printed circuit board without casing, mounted inside the luminaire. The fixture should comply with the parameters as per IS10322. Manufacturer shall have inhouse lab approved by NABL . LM 79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Dimension: Ø115 X 158 X 93mm & Weight including all accessories should not be more than 1.5Kg.	Each	30	4100.00	123000.00
3.27	Supply, Installation, Testing and Commissioning of LED aviation light with Die-cast aluminum housing with Red polycarbonate dome for better illumination, Integral driver, IP:65, Features and Benefits Protection against short-circuit. Protection against surge. Wide operating input voltage range 150 – 270VAC, lumen maintainance of 70% at the end of 50000 burning hours.	Each	4	3324.00	13296.00
3.28	Supply, Installation, Testing and Commissioning of 3W LED Unidirectional Exit Signage Light with inbuilt 2hours battery back up .	Each	72	2770.00	199440.00
3.29	Supply, Installation, Testing and Commissioning of 1200 mm sweep, BEE 5 star rated, ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. blades, 30 cm long down rod, nos. canopies, shackle kit, safety rope, copper winding, Power Factor not less than 0.9, Service Value (CM/M/W) minimum 6.00, Air delivery minimum 210 Cum/Min , 350 RPM (tolerance as per IS : 374-2019), THD less than 10%, remote or electronic regulator unit for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Supply, earthing etc. complete as required.	Each	50	2393.00	119650.00

S. No	DESCRIPTION	UNIT	QTY	RATE without GST	AMOUNT
3.30	Supplying and Installation of 3m MS pole provided with 35-55 micron Anti rust coating & PU (PolyUrethane) Painted, the pole coating includes red oxide and PU synthetic paint coatings in 2 layers. The pole shall be made of 3.0mm thick sheet with 80 mm outer dia with a base plate minimum of 300mm X 300mm, thickness- 15 mm, 2Nos Template and 4 nos of Gl. foundation nut & bolt (25mm dia & 250mm long) complete as required.	Each	60	4919.00	295140.00

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3.31	Design, Manufacture, Transport to the site of 7.5 mt high, min dia 135 mm at bottom and 70 mm at top hot dipped galvanised (120 GSM) octagonal pole including Single over hang 1.0 meter long Street light pole bracket made of 3 mm thick steel plate with single longitudinal welding designed to withstand wind speed of min. 169 KM /hrs having baseplate 310x310x16mm, window section and flush cover with locking arrangement at 600 mm height for cable termination block, including strengthening of cable termination block making arrangement for cable termination and template and anchor plate 300x300x3mm ,with 4 nos 750 mm long 24 mm dia foundation bolts (EN8 grade) each with 2Nos. G.I. nuts washer. Provide necessary window with door and lock at min. 600 m with din rail for provided 4 pole 40 amp heavy duty terminals, 10A SP MCB with central overload trip mechanism and flag indication and 3 core 1.5 sqmm cu flexible cable between MCB with central overload trip mechanism and flag indication to each light on top, gland plate for cable termination and earthing stud with Single over hang 1.0 meter long Street light pole. bracket Note: The foundation Bolts and Holes shall be as per the pole manufacturer's instructions.	Each	50	19622.00	981100.00
3.32	Erection of metallic pole of following length in cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) foundation including excavation and refilling etc. as required.				
3.33.1	Above 6.5 meter and upto 8.0 meter	Each	50	5318.00	265900.00
3.33	Supply, Installation, Testing and Commissioning of occupancy sensor powered by intelliscan technology (Occupancy & motion detection) which uses 5.6GHz low impedance antenna which cancels out the risk of radio interference. It will switch off the lights in a room or area when it is vacated and thus save energy. Sensor should have Light level optimisation with daylight harvesting and it should have ability to detect breathing & heartbeat of occupants for better function. Sensor can be mounted at a ceiling height of max 3.5mtr with a detection radius of 4m(minor movement detection), 5m(Major movement detection) and 4m(Breathing detection). Its smart daylight sensing technology offers additional saving through daylight override and daylight switching.	Each	173	4762.00	823826.00
4	INSTALLATIONS OF LIGHT FIXTURES AND FANS				
1	Installation, testing and commissioning of pre-wired, LED 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	3217	180.00	579060.00
2	Numbering of ceiling fan/ exhaust fan/ fluorescent fittings as required.	Each	3217	49.00	157633.00
5	LIGHTNING CONDUCTOR				
5.1	Supply and fixing of Vertical Aluminium Lighting Arrester of 16MM dia, 2000 mm long with Gun Metal base plate complete as required .	Nos.	3	1718.00	5154.00
5.2	Supply and fixing of 8 mm round aluminium conductor for horizontal lightning protection - run in roof complete as required .	Meter	788	72.00	56736.00
5.3	Supply and fixing of roof conductor holder for 8 mm round aluminium conductor made of SS 304 for horizontal installation at the roof The distance between each holder should be min of 1 mtr to meet the requirements of IS/IEC 62305 & IEC 62561 2 complete as required .	Nos.	788	133.00	104804.00
5.4	Supply and fixing of Cross connector for connecting of 8 mm Al round conductor . The connector should be of SS 304 with SS nuts and bolt to meet the requirements of IS/IEC 62305 & IEC 62561 2 complete as required .	Nos.	37	199.00	7363.00
5.5	Supply and fixing of Expansion piece along with connector to compensate the expansion of round 8 mm Al conductor when temperature variation . Connection should be in every 20 mtr complete as required .	Nos.	39	177.00	6903.00
5.6	Supply and fixing of GLUE- Glue is used to fix roof conductor holder on roof complete as required .	Nos.	40	310.00	12400.00
5.7	Supply and fixing of 8 mm round aluminium conductor as a down conductor mounted in the surface of wall which will carry the lightning current to earth pit complete as required . (Vertical)	Meter	504	72.00	36288.00
5.8	Supply & Installation of Vertical Down conductor holder for 8 mm round aluminium conductor made SS 304 for horizontal installation. The distance between each holder should be min of 1 mtr to meet the requirements of IS/IEC 62305 & IEC 62561 2 complete as required .	Nos.	504	133.00	67032.00
5.9	Supply and fixing of straight connector for connecting of 8 mm Al round conductor . The connector should be of Aluminium with SS nuts and bolt complete as required .	Nos.	19	166.00	3154.00
5.10	Supply and fixing of 7 digit lightning strike counter complete as required .	Nos.	1	14959.00	14959.00
5.11	Supply and fixing of Test Joint Point for 25X3MM CU STRIP in ABS boxes complete as required .	Nos.	12	1551.00	18612.00
5.12	Supply, Installation, Testing and Commissioning of advance chemical gel earthing system for the proper dissipation of fault / leakage current to the ground and ensure the continuous electrical connectivity and proper functioning to the electrical system. The earth rod shall be of UL listed & CPRI tested 3 meter long 17.2 mm dia 250 microns copper bonded steel rod with the connecting clamp (ss - rod to tape). The UL listed copper bonded rod also should be tested & certified from CPRI for a short circuit current of 46 KA or more. The UL listing shall be punched / engraved on the rod for the physical verification at site. The engravings shall contain the following details - UL Control number, Dimension details of the rod, Product model number & UL certificate reference number as per detailed technical specification attached. To ensure the electrical conductivity, 50 Kgs (per pit) or more resistance grounding minerals per earth pit / earth rod shall be used along with the copper bonded rod. As per IEEE 80-2013 (Clause 14.5 d), the grounding minerals shall be tested & certified for the resistivity of less than 0.12 ohm-mtr. The grounding minerals should be ROHS certified to ensure it does not pollute the ground water as per technical specification attached.	Nos.	12	4654.00	55848.00
5.13	Providing and laying G.I. tape 32 mm X 6 mm from earth electrode directly in ground as required.	Meter	431	171.00	73701.00
5.14	Supply, Installation, Testing and Commissioning of heavy duty weather proof environment friendly polyplastic earth pit chamber with cover of auto-locking facility with the following dimensions - 254 mm dia (top), 330 mm dia (bottom) and 260 mm height. 4 knock-out openings are provided for the easy interconnection of earth strips between the earth pits to form a grid. Earhpit chamber cover should be tested & certified for 9 ton load bearing capacity from National test house (A central Government Lab) Ghaziabad.	Nos.	12	776.00	9312.00
6	FIRE ALARM & FIRE TALK BACK SYSTEM				
6.1	Supplying, installation, testing and commissioning of micro processor based intelligent addressable main fire alarm panel, central processing unit with the following loop modules and capable of supporting not less than 240 devices (including detectors) and minimum 120 detectors per loop and loop length up to 2 km, network communication card, minimum 320 character graphics/ LCD display with touch screen or other keypad and minimum 4000 events history log in the non volatile memory (EPROM), power supply unit (230 ± 5% V, 50 hz), 48 hrs back-up with 24 volt sealed maintenance free batteries with automatic charger. The panel shall have facility to connect printer to printout log and facility to have seamless integration with analog/digital voice evacuation system (which is part of the schedule of work under SH: PA System) and shall be complete with all accessories . The panel shall be compatible for IBMS system with open protocol BACnet/ Modbus over IP complete as per specifications.				
6.1.1	Ten Loop Panel	Nos..	1	399416.00	399416.00
6.2	Supplying, installation, testing & commissioning of central graphical fire alarm management system to centrally monitor and operate the fire alarm system complete as required.	No.	1	175897.00	175897.00
6.3	Supplying, installation, testing & commissioning of repeater panel with 320 character/ Touch screen LCD display with inbuilt reset, acknowledge and silence switches complete as required.	No.	1	95299.00	95299.00
6.4	Supplying, installation, testing & commissioning of intelligent analog addressable photothermal detector complete with mounting base complete as required.	Nos..	756	2505.00	1893780.00
6.5	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..	353	241.00	85073.00

S. No	DESCRIPTION	UNIT	QTY	RATE without GST	AMOUNT
6.6	Supplying, installation, testing & commissioning of fault isolator complete with base as required.	Nos..	45	2867.00	129015.00
6.7	Supplying, installation, testing & commissioning of intelligent addressable thermal detector with rate of rise cum fixed tempreature thermistor complete with base as required.	Nos..	6	2390.00	14340.00
6.8	Supplying, installation, testing & commissioning of addressable fire control module complete with base as required.	Nos..	5	2633.00	13165.00
6.9	Supplying, installation, testing & commissioning of intelligent addressable duct detector including suitable Photo detector complete with base as required.	Nos..	44	6851.00	301444.00

S. No	DESCRIPTION	UNIT	QTY	RATE without GST	AMOUNT
6.10	Supplying, installation, testing & commissioning of addressable manual call point complete as required.	Nos..	26	3394.00	88244.00
6.11	Supplying, installation, testing & commissioning of addressable horne cum strobe complete as required.	Nos..	26	3074.00	79924.00
6.12	Supplying, installation, testing & commissioning of fire fighter telephone handset complete as required.	Each	4	5032.00	20128.00

S. No	DESCRIPTION	UNIT	QTY	RATE without GST	AMOUNT
6.13	Supplying, installation, testing & commissioning of interface unit BACnet/ Modbus protocol i.e. Supplying communication links between building management system and fire alarm control panel complete as required.	Each	1	164615.00	164615.00
6.14	Supplying, installation, testing & commissioning of fire fighter phone jack complete as required.	Each	25	1402.00	35050.00
6.15	Supplying, installation, testing & commissioning of addressable Monitor module complete with base as required.	Nos.	25	4925.00	123125.00
6.16	Supplying, installation, testing & commissioning of addressable Relay module complete with base as required.	Nos..	48	4925.00	236400.00
6.17	Supplying & laying of 2x1.5 sqmm fire survival armoured cable, 600/1000V rated with annealed copper conductor having glass mica fire barrier tape covered by an extruded layer of Cross Linkable Ethylene Propylene Rubber (EPR) insulation and LSZH inner bedding, steel wire armouring & LSZH outer sheath complete as required.	Meter	7622	314.00	2393308.00
6.18	Supplying and drawing following sizes of FRLS PVC insulated copper conductor, single core cable in the existing surface/ recessed steel/ PVC conduit as required.				
6.18.1	2 x 1.5 sq. mm (For Talk Back)	Meter	389	61.00	23729.00
6.19	Supplying and fixing 25 mm dia MS flexible pipe with PVC coating along with all ancillaries and accessories like coupler etc. as required.	Meter	200	46.00	9200.00
6.20	Supplying and fixing of following sizes 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.				
6.20.1	25 mm	Meter	389	127.00	49403.00
7	SAFETY EQUIPMENTS				
7.1	Providing & fixing in position 1000 mm wide , Electrical Insulating Mats as per IS 15652:2006, 2mm thick, suitable upto 3.3 KV , fire retardant, no effect of acids, alkalies and transformer oils, moisture proof, high tensile strength and texture finish / cloth impression (Anti slip , marking on top) .	Meter	60	573.00	34380.00
7.2	Supply and fixing in position approved shock treatment chart written in English, Hindi and local language. These charts shall be framed in wooden frame and covered with clear glass.	Nos.	1	308.00	308.00
7.3	Supply of First aid box as approved by St. John Ambulance Brigade /Indian Red Cross society conforming to IS : 2217 - 1963.	Nos.	1	1588.00	1588.00
7.4	Providing and fixing M.V. danger notice plate of 200 mm X 150 mm, made of mild steel, at least 2 mm thick, and vitreous enameled white on both sides, and with inscription in single red colour on front side as required.	Nos.	17	235.00	3995.00
7.5	Supply and fixing safety instruction chart both in Hindi & English duly framed with 3 mm thick glass as required. (approximate front area 1.00 sq. metre)	Nos.	1	6772.00	6772.00
8	EARTHING SYSTEM				
8.1	Earthing with G.I. earth plate 600 mm X 600 mm X 6 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	10	6552.00	65520.00
8.2	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	6	12133.00	72798.00
8.3	Providing and fixing 25 mm X 5 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required.	Meter	126	619.00	77994.00
8.4	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	Meter	3423	213.00	729099.00
8.5	Providing and fixing 50 mm X 6 mm G.I. strip on surface or in recess for connections etc. as required.	Meter	21	498.00	10458.00
8.6	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing as required.	Meter	2205	61.00	134505.00
8.7	Providing and fixing 50 mm X 6 mm G.I. strip in 50 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required.	Meter	53	1083.00	57399.00
8.8	Supply, installation, testing & commissioning of dedicated earth boxes of complete with 14 SWG sheet steel enclosure of suitable size with 32x6 mm Cu. Strip of 300mm long on SMC insulator for incoming & outgoing cables for IT Rack earthing.	Meter	2	3878.00	7756.00
9	CABLE TRAY & RACEWAY				
9.1	Supplying and installing following size of perforated Hot Dipped Galvanised Iron cable tray (galvanisation thickness not less than 50 microns) with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with G.I. suspenders including G.I. bolts & nuts, etc. as required.				
9.1.1	100 mm width X 50 mm depth X 1.6 mm thickness	Meter	143	586.00	83798.00
9.1.2	300 mm width X 50 mm depth X 1.6 mm thickness	Meter	704	844.00	594176.00
9.1.3	450 mm width X 50 mm depth X 2.0 mm thickness	Meter	132	1161.00	153252.00
9.1.4	600 mm width X 50 mm depth X 2.0 mm thickness	Meter	281	1569.00	440889.00
9.1.5	750 mm width X 75 mm depth X 2.0 mm thickness	Meter	264	1990.00	525360.00
9.1.6	900 mm width X 75 mm depth X 2.0 mm thickness	Meter	94	2290.00	215260.00
9.2	Supplying and installing following size of perforated Hot Dipped Galvanised Iron cable tray "bends" (galvanisation not less than 50 microns) with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with G.I. suspenders including G.I. bolts & nuts, etc. as required.				
9.2.1	100 mm width X 50 mm depth X 1.6 mm thickness	Each	33	1016.00	33528.00
9.2.2	300 mm width X 50 mm depth X 1.6 mm thickness	Each	33	1623.00	53559.00
9.2.3	450 mm width X 50 mm depth X 2.0 mm thickness	Each	7	2352.00	16464.00
9.2.4	600 mm width X 50 mm depth X 2.0 mm thickness	Each	13	3309.00	43017.00
9.2.5	750 mm width X 75 mm depth X 2.0 mm thickness	Each	33	4270.00	140910.00
9.2.6	900 mm width X 75 mm depth X 2.0 mm thickness	Each	13	4942.00	64246.00
9.3	Supplying and installing following size of perforated Hot Dipped Galvanised Iron cable tray "Tee" (galvanisation not less than 50 microns) with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with G.I. suspenders including G.I. bolts & nuts, etc. as required.				
9.3.1	100 mm width X 50 mm depth X 1.6 mm thickness	Each	7	1164.00	8148.00
9.3.2	300 mm width X 50 mm depth X 1.6 mm thickness	Each	33	1890.00	62370.00
9.3.3	450 mm width X 50 mm depth X 2.0 mm thickness	Each	13	2754.00	35802.00
9.3.4	600 mm width X 50 mm depth X 2.0 mm thickness	Each	13	3898.00	50674.00
9.3.5	750 mm width X 75 mm depth X 2.0 mm thickness	Each	20	5029.00	100580.00
9.3.6	900 mm width X 75 mm depth X 2.0 mm thickness	Each	13	5829.00	75777.00
9.4	Supplying and installing following size of perforated Hot Dipped Galvanised Iron cable tray "Reducer" (galvanisation not less than 50 microns) with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with G.I. suspenders including G.I. bolts & nuts, etc. as required.				
9.4.1	100 mm width X 50 mm depth X 1.6 mm thickness	Each	7	1451.00	10157.00
9.4.2	300 mm width X 50 mm depth X 1.6 mm thickness	Each	33	2475.00	81675.00
9.4.3	450 mm width X 50 mm depth X 2.0 mm thickness	Each	13	3262.00	42406.00
9.4.4	600 mm width X 50 mm depth X 2.0 mm thickness	Each	13	4511.00	58643.00
9.4.5	750 mm width X 75 mm depth X 2.0 mm thickness	Each	20	5685.00	113700.00
9.4.6	900 mm width X 75 mm depth X 2.0 mm thickness	Each	13	6583.00	85579.00

S. No	DESCRIPTION	UNIT	QTY	RATE without GST	AMOUNT
9.5	Supply and fixing of following size of under floor GI raceways for distributing cabling in screed floor installations particularly suitable for application requiring EMC screening. Raceway should be made up of Pre galvanized sheet with minimum thickness of 1.5mm consist of body and cover. It should have average of 120GSM zinc coating. Raceway should be openable from top. Cover fitted on to the body with self forming screw and can be opened easily if required. Raceway should be supplied with required accessories such as fixing brackets and coupling plates as required. Raceway should be confirmed with the standard EN 50085-2-2 including all accessories complete as required				
9.5.1	300 mm wide x 38 mm deep raceway (3 compartment)	Meter	1554	820.00	1274280.00
9.5.2	100 mm wide x 38 mm deep raceway (1 compartment)	Meter	2112	313.00	661056.00
9.5.3	150 mm wide x 38 mm deep raceway (2 compartment)	Meter	660	466.00	307560.00
9.5.4	Coupler Plate (38 mm)	Nos.	3461	10.00	34610.00
9.5.5	Hardware, Nut, Bolt & Washer (8x20mm)	Nos.	13843	3.00	41529.00
9.6	Supply and fixing of following size of Height adjustable under floor crossover Junction box with flyover for Raceways for direct access to cables at the intersection of Raceways supplied completely with base and cover plate(lid). Junction box should be made of Pre galvanized sheet consist of body and cover. Height of the junction box should be adjustable from minimum 60mm. Junction box should be supplied with the metal cover for protecting the junction box during constructions at site. It should be confirmed with the standard EN 50085-2-2s including all accessories complete as required:				
9.6.1	ADJ JB 300 X 300 X 50 X 1.5 MM	Nos.	132	513.00	67716.00
9.6.2	ADJ JB 150 X 150 X 50 X 1.5 MM	Nos.	450	287.00	129150.00
9.6.3	ADJ JB 200 X 200 X 50 X 1.5 MM	Nos.	264	362.00	95568.00
	Important Notes for raceways:-				
a.	Contractor to get the samples of floor and ceiling raceways to be approved from the Architect/ Project Manager/ Consultant/ Client before supply & erection.				
b.	Depth of the floor raceway is to be decided by the contractor after checking/ examining screed depth available at site. For this purpose chipping to be carried out at various places on the floor/ floors to carefully assess the depth/ floor margin available. Final approval is to be obtained from the Architect/ Project Manager/ Client before ordering/ fabricating raceway. The sizes & depths of raceways given in the BOQ are only tentative & indicative.				
c.	Contractor is also supposed to check and confirm the adequacy of raceway sizes by calculating the exact number of electrical circuit wires & N/W wires for respective Electrical & N/W raceways.				
10	M.V. PANELS				
10.01	Design, manufacture, supply , installation, inspection, handling, assembling, affecting proper connections, testing and commissioning of L T Panel, floor mounting, dust & vermin proof, front operated construction, enclosure class - IP42. Panel Construction should be of 2mm folded metal sheets thickness, except for few internal partitions. The Main LT Panel should be tested according to the latest standards, IEC61439-1&2 and shall be certified by 3 rd party Certification body as per IEC 61439-1 & 2. Test reports without certificate shall not be considered admissible proof of compliance. The Certifying Authority shall be qualified under ISO/IEC 17065 as per IEC 61439-1.MAIN LT PANEL as per IEC 61439-1&2 and IEC 61641 for 0.3 sec min				
10.02	LT Panel should have Rated Impulse withstand voltage of 12 KV and Rated Insulation Voltage of 1000V. The Panel shall be rated for Short time current withstand, I _{cw} (1 Sec) = 50KA.				
10.03	LT Panel should have compartmentalized design with separate totally enclosed compartments for horizontal bus bars, vertical bus bars, ACBs, MCCBs & Cable Alleys. The LV Switchboard shall be rated for degree of Protection as IP 42, and Form of internal separation as Form 3b construction with Metallic Separators & Shrouding only. FRP/Hylem separations not acceptable.				
10.04	The LT Panel shall be rated for Internal Arc withstand of 50 kA for 0.3 sec, Class-C in compliance to IEC 61641 standards. To ensure right performance on Seismic risk, Switchboards shall be validated design for Seismic withstand for Ground Acceleration level of 2g. Test shall be performed in accordance with standard IEEE 693 : 2018.				
10.05	The Bus bars will be Copper purity 99.9% / electrolytic grade E91 Aluminium duly sleeved with Helogen Free heat shrink coloured Insulated tube confirming to IEC 6068-3-247 Standard. The powder coating (70-80micron as per IS:13871 for indoor and 100-120 micron for outdoor), include one size higher terminal block in cable alley and interconnecting wires between bus bars and terminals via MCB.				
10.06	General Notes for site visit report for Panels/ Rising Main before submitting GA.				
10.07	The Manufacturer must visit the site before submitting GA drawings and submit a report consisting following:				
10.08	Possible height for Panel.				
10.09	Possible width for Panel				
10.10	Back access will be possible or not.				
10.11	Cable entry will be from top or bottom.				
10.12	If entry from bottom whether MS. Stand is required or not.				
10.13	If the panel is wall mounted whether the wall is available or not.				
10.14	Path for movement of transportation of panel is possible or not i.e length, width etc. and the transportation sections shall be designed accordingly.				
10.15	Sufficient space available at front & back after door opening.				
10.16	Sufficient height available above panel for cable drop.				
10.17	Actual floor to floor height for rising mains.				
10.18	Also, refer to General Notes and Specifications for Panels/ Boards.				
10.19	Provide thermostat controlled panel mounted heavy duty exhaust fan in each Vertical and space heater in Bus bar alley for all Main L.T Panel and Capacitor Panels.				
10.20	Contractor to submit manufacturer's selection charts, Discrimination check certificate, insulation material & corners cover on bus-bars for approval.				
10.21	If mentioned fault rating of bus-bar and circuit breaker is unavailable consider next available upside rating				
10.22	Mimic diagram shall be provided on all panels.				
10.23	It is recommended that only one make of switchgear to be used in a board / Panel.				
10.24	All live accessible parts shall be shrouded and all equipment shall be finger touch proof. SMC shrouds busbar supports shall be used. Padlocking facility shall be provided on all MCCB feeders doors and switch handles shall be lockable in OFF position.				
10.25	Equipments will be offered for following routine test only:- i). Check of Bill of Materials as per approved drawing, ii). Visual and Dimensional Check, iii) Functional Check, iv) HV/Megger test as per relevant IS. v) Type tests from CPRI of any two panels as choice of electrical consultant.				
10.26	Minimum/Maximum Operating height- 300/1800 respectively				
10.27	Sealing Arrangement:- PE Foam Rubber Gasket				
10.28	Bus Bars Supports - Non-Hygroscopic, Non Carbonising, Corrosion Resistant, SMC Supports				
10.29	1 Set of connector (Phase+Neutral) shall be provided in cable alley for all outgoing with interconnection wires between MCB and Connector.				

S. No	DESCRIPTION	UNIT	QTY	RATE without GST	AMOUNT
10.30	Bottom base channel of floor standing panel shall be made of M.S. angle iron, not less than 50mm x 50mm x 5mm thick for panel overall height upto 1800mm and above in height 75mm x 75mm x 6mm thick, fabrication shall be done in transportable sections. Similarly, All outdoor use panel shall have bottom base stand of minimum 450mm M.S. angle iron 32mmx 32mmx6mm with fixing arrangement in RCC foundation.				
10.31	Strip heater in each bus-bars section shall be provided in all Main L.T Panel & Capacitor Panel				
10.32	No derating shall be applicable upto ambient temp. 50°C for all breakers and selected components.				
10.33	Each door other than bus bar section shall be 2 numbers wing knob cabinet cam lock with master key lock made of zinc alloy powder coated housing, handle and chrome plated cylinder and nut CL001.				
10.34	Minimum Air Clearances between bus bars; (Calculation with required supporting document shall be submitted by Panel manufacturer along with GA diagram).				
10.35	P-P=32mm, P-N=32mm,P-E=26mm and N-E=26mm				
10.36	Panel Power and control Wiring all FRLS PVC insulated				
10.37	AC voltage circuit-1.5 sqmm Red,Yellow,Blue &Black				
10.38	Current circuit-1.5 sqmm Red,Yellow,Blue &Black				
10.39	AC Control circuit-1.5 sqmm White for Phase & Black for Neutral				
10.4	DC Control circuit-2.5 sqmm Grey				
10.41	Power circuit- Red,Yellow,Blue for Phase &Black for Neutral				
10.42	Labelling- Computerised Laminated Aluminium Name Plate with White letters on Blue/Black Background For Each Feeder and Panel Itself.				
10.43	The treatment of Panel Shall be Fully automatic 9-tank process for metal treatment which consists of Solvent/ Alkaline Degreasing, Activation, Water Rinsing, De-rusting, Phosphating, Passivation and Water drying.				
10.44	A separate compartment for Minimum 20% spare space of Panel shall be provided for outgoings in future and busbars shall be drilled accordingly.				
10.45	To prevent fire risk and maintain Installation/manpower safety, Cable overheat sensor should be installed in Panel Columns with cable connections, cable alleys etc. This sensor will sense any abnormal heating in the cables inside the Panel due to factors like insulation deterioration or physical damage/ageing and will give alert via mail notification or alarm for preventive/corrective steps to be taken before actual fire incident happens. Panel builder will make the required communication arrangement for local/remote monitoring of these sensors on Customer LAN Network thru web server or HMI on Panel Door.				
10.46	As per LEED guidelines, this energy consumption data and electrical demand data should be tracked every month and resulting 5-year data will be shared with U.S. Green building council (USGBC).				
10.47	All panels shall be compatible with the Building Management System (BMS).				
10.48	Main LT Panel				
10.49	INCOMER				
10.50	2 No. 1250Amps 4P EDO type Air circuit breaker built-in self powered micro-processor based releases for O/L,S/C,I/G&E/F of fault breaking capacity 50KA (Ics=Icu=Icw upto 415V manually operated, Inbuilt Shunt Trip indication. fitted with interlocked door, door sealing frame, automatic safety shutters and frame earthing contact, additional min. 4NO + 4NC Auxiliary contacts, the ACBs must be provided with terminal adaptors (Hr Vr), ACB conforming to IS-1397-2 (1993) and complice RoHS as amended up-to-date complete with following accessories for each complete with following accessories for each ACB. Terminals suitable for Bus duct connections on incomer side and bus bar connection at output sides.				
10.51	Including Electrical & Mechanical interlocking between each Incomers				
10.52	BUSCOUPLER				
10.53	1 No. 1250Amps 4P EDO type Air circuit breaker built-in self powered micro-processor based withour releases for O/L,S/C,I/G&E/F of fault breaking capacity 50KA (Ics=Icu=Icw upto 415V manually operated, Inbuilt Shunt Trip indication. fitted with interlocked door, door sealing frame, automatic safety shutters and frame earthing contact, additional min. 4NO + 4NC Auxiliary contacts, the ACBs must be provided with terminal adaptors (Hr Vr), ACB conforming to IS-1397-2 (1993) and complice RoHS as amended up-to-date complete with following accessories for each complete with following accessories for each ACB. Terminals suitable for Bus duct connections on incomer side and bus bar connection at output sides.				
10.54	METERING, RELAY, INDICATOR & CT's				
10.55	1Set of R,Y,B phase indication lamps with control MCB as per fault requirement for each Incomer.				
10.56	Provide 6Nos indicating lamps on each ACB for status indication "ON","OFF" , tripped Due to Earth fault & Trip circuit healthy,Short Circuit and true operation counter for all ACB				
10.57	Wherever 4 Pole ACBs used, it shall have fully rated neutral equal to rating of the breaker & shall be protected against over-load faults with provisions for settings neutral unprotected, neutral protection at 0.5In and neutral protection at 1.0 In to ensure precise neutral protection.				
10.58	1Set of 'ON/OFF' Indication lamps with control MCB for each MCCB outgoing.				
10.59	1Nos. 30-300mA ELR with tape wound CBCT for each MCCB outgoings as shown in SLD.				
10.60	1Set of trip due to earth leakage Indication lamps with each Earth Leakage Relay.				
10.61	High Profile multifunction meter with demand monitor & Ind.Harmonics up to 31st level , in class 1.0 having modbus 485 communication . the meter should have a sampling rate of 128 samples/cycle . Measurement of V,A,HZ,PA ,KW,KWH,KVARH,KVAH,KVA,THD,DEMAND MONITOR & PHASE WISE energy monitoring through communication . input voltage measurement up to 600V L_L & starting current measurement of 10mA , flush mounting 96sqmm EN 8400 with import & export of kwh parameters in both incomers				
10.62	Multifunction meter should be of flush mounting 96 sq mm with alphanumeric LED display with all electrical measurement like VAF, KW,KWH & PHASE WISE energy monitoring through communication RS 485 port available with meter. MFM should have a wide measurement range of 10mA to 6A & sampling rate of 128 samples per cycle.. accuracy class of 1.0 with meter AUX supply 80--300v AC/DC in all outgoing feeders.				
10.63	BUSBARS SECTIONS- 1&2				
10.64	1500 Amps 4P, 50kA, 500volts grade busbar chamber of suitable length with Aluminium busbars mount on SMC supports. All interconnections shall be as follows; a). Upto 63A, FRLS PVC insulated copper flexible colour coded wires b). 64Amp to 199Amp Copper Bus-bars and above aluminium, current density of bus-bars shall not be less than 0.8Amps/sq.mm for Aluminium and 1.6Amps/sq.mm for copper cross sectional area of Bus Bar.				
10.65	For each busbar: Each Bus Section with 1 No Surge protection device Type 1 (Class B),true status indication, 7 Mode, spark gap type suitable for 10/ 350µs surge,Voltage Protection level Up < 4.0kV, Operating Temperature -40 deg 'c' - +80 deg 'C', Connected Between 3Nos. phase to neutral & 3Nos. phase to earth and 1Nos. neutral to earth with discharge Current I _{max} ≥ 50KA Per mode & I _n ≥ 25kA per Mode. SPD with 125A 4P HRC fuses of 100kA breaking capacity. For connecting SPD minimum 16sqmm copper wire must be used & length of connecting leads shall not be more than 500mm for per mode connection with each busbar including all necessary accessories. The SPD shall compliance with IEC 61643-11 and certified by TUV,CE,ROHS,UL94V-O.				
10.66	OUTGOINGS CONNECTED AS SHOWN IN SLD:				

S. No	DESCRIPTION	UNIT	QTY	RATE without GST	AMOUNT
10.67	1 Nos. 630A 4P MCCB built in microprocessor based release (adjustable O/L,S/C) of fault breaking capacity 35KA (lcs=lcu=100%) upto 415V manually operated with extended rotary handle with castle lock for door interlock with Phase spreader & Phase Barriers at both sides. MCCB shall conforming to IS-1397-2 1993 as amended.				
10.68	1 Nos. 500A 4P MCCB built in microprocessor based release (adjustable O/L,S/C) of fault breaking capacity 35KA (lcs=lcu=100%) upto 415V manually operated with extended rotary handle with castle lock for door interlock with Phase spreader & Phase Barriers at both sides. MCCB shall conforming to IS-1397-2 1993 as amended.				
10.69	2 Nos. 320A 4P MCCB built in microprocessor based release (adjustable O/L,S/C) of fault breaking capacity 35KA (lcs=lcu=100%) upto 415V manually operated with extended rotary handle with castle lock for door interlock with Phase spreader & Phase Barriers at both sides. MCCB shall conforming to IS-1397-2 1993 as amended.				
10.70	11 Nos. 200A 4P MCCB built in microprocessor based release (adjustable O/L,S/C) of fault breaking capacity 35KA (lcs=lcu=100%) upto 415V manually operated with extended rotary handle with castle lock for door interlock with Phase spreader & Phase Barriers at both sides. MCCB shall conforming to IS-1397-2 1993 as amended.				
10.71	2Nos. 160A 4P MCCB built in Thermal Magnetic based release (adjustable O/L,S/C) of fault breaking capacity 35KA (lcs=lcu=100%) upto 415V manually operated with extended rotary handle with castle lock for door interlock with Phase spreader & Phase Barriers at both sides. MCCB shall conforming to IS-1397-2 1993 as amended.				
10.72	7 Nos. 100A 4P MCCB built in Thermal Magnetic based release (adjustable O/L,S/C) of fault breaking capacity 35KA (lcs=lcu=100%) upto 415V manually operated with extended rotary handle with castle lock for door interlock with Phase spreader & Phase Barriers at both sides. MCCB shall conforming to IS-1397-2 1993 as amended.				
10.73	5 Nos. 63A 4P 10kA MCB 'C' Curve				
10.74	1 Nos. 40A 4P 10kA MCB 'C' Curve				
10.75	1 Nos. 25A 4P 10kA MCB 'C' Curve				
10.76	Main LT Panel as described above.	Set	1	1158993.00	1158993.00
10.77	AHU Panel-1 for Ground Floor				
10.78	INCOMER				
10.79	1 Nos. 100A 4P MCCB built in Thermal based release (adjustable O/L,S/C,E/F) of fault breaking capacity 35KA (lcs=lcu=100%) upto 415V manually operated with extended rotary handle with castle lock for door interlock with Phase spreader & Phase Barriers at both sides. MCCB shall conforming to IS-1397-2 1993 as amended.				
10.80	METERING, INDICATOR AND RELAYS				
10.81	Multifunction meter should be of flush mounting 96 sq mm with alphanumeric LED display with all electrical measurement like VAF, KW,KWH & PHASE WISE energy monitoring through communication RS 485 port available with meter. MFM should have a wide measurement range of 10mA to 6A & sampling rate of 128 samples per cycle.. accuracy class of 1.0 with meter AUX supply 80--300v AC/DC.				
10.82	1Set of R,Y,B phase indication lamps with control MCB as per fault requirement for each Incomer.				
10.83	Provide 3Nos indicating lamps for status indication "ON","OFF" , Tripped due to earth fault on each incomer MCCB				
10.84	1Nos. 30-3000mA ELR with CBCT in incomer.				
10.85	TVSS AND BUS BARS FOR EACH SECTION				
10.86	150 Amps TP+50%N, 35kA, 500volts grade busbar chamber of suitable length with Aluminium busbars mount on SMC supports. All interconnections shall be as follows; a). Upto 63A, FRLS PVC insulated copper flexible colour coded wires b). 64Amp to 199Amp Copper Bus-bars and above aluminium, current density of bus-bars shall not be less than 0.8Amps/sq.mm for Aluminium and 1.6Amps/sq.mm for copper cross sectional area of Bus Bar.				
10.87	For each busbar: 1 No Surge protection device Type 2 (Class C), 4 Mode, MOV type suitable for 8/ 20µs surge,Voltage Protection level Up < 1.8kV, Operating Temperature -40 deg 'c' - +80 deg 'C', Connected Between 3Nos. phase to neutral and 1Nos. neutral to earth with discharge Current Imax. ≥ 40KA Per mode & In ≥ 20kA per Mode. SPD with 63A 4P HRC fuses of 100kA breaking capacity. For connecting SPD minimum 10sqmm copper wire must be used & length of connecting leads shall not be more than 500mm for per mode connection including all necessary accessories. The SPD shall compliance with IEC 61643-11 and certified by TUV,CE,ROHS,UL94V-O..				
10.88	OUTGOINGS				
10.89	11 Nos. 25A 4P 10kA MCB 'C' Curve				
10.90	AHU Panel-1 for Ground Floor as described above.	Set	1	65696.00	65696.00
10.91	AHU Panel-2 for First Floor				
10.92	INCOMER				
10.93	1 Nos. 100A 4P MCCB built in Thermal based release (adjustable O/L,S/C,E/F) of fault breaking capacity 35KA (lcs=lcu=100%) upto 415V manually operated with extended rotary handle with castle lock for door interlock with Phase spreader & Phase Barriers at both sides. MCCB shall conforming to IS-1397-2 1993 as amended.				
10.94	METERING, INDICATOR AND RELAYS				
10.95	Multifunction meter should be of flush mounting 96 sq mm with alphanumeric LED display with all electrical measurement like VAF, KW,KWH & PHASE WISE energy monitoring through communication RS 485 port available with meter. MFM should have a wide measurement range of 10mA to 6A & sampling rate of 128 samples per cycle.. accuracy class of 1.0 with meter AUX supply 80--300v AC/DC.				
10.96	1Set of R,Y,B phase indication lamps with control MCB as per fault requirement for each Incomer.				
10.97	Provide 3Nos indicating lamps for status indication "ON","OFF" , Tripped due to earth fault on each incomer MCCB				
10.98	1Nos. 30-3000mA ELR with CBCT in incomer.				
10.99	TVSS AND BUS BARS FOR EACH SECTION				
10.100	150 Amps TP+50%N, 35kA, 500volts grade busbar chamber of suitable length with Aluminium busbars mount on SMC supports. All interconnections shall be as follows; a). Upto 63A, FRLS PVC insulated copper flexible colour coded wires b). 64Amp to 199Amp Copper Bus-bars and above aluminium, current density of bus-bars shall not be less than 0.8Amps/sq.mm for Aluminium and 1.6Amps/sq.mm for copper cross sectional area of Bus Bar.				
10.101	For each busbar: 1 No Surge protection device Type 2 (Class C), 4 Mode, MOV type suitable for 8/ 20µs surge,Voltage Protection level Up < 1.8kV, Operating Temperature -40 deg 'c' - +80 deg 'C', Connected Between 3Nos. phase to neutral and 1Nos. neutral to earth with discharge Current Imax. ≥ 40KA Per mode & In ≥ 20kA per Mode. SPD with 63A 4P HRC fuses of 100kA breaking capacity. For connecting SPD minimum 10sqmm copper wire must be used & length of connecting leads shall not be more than 500mm for per mode connection including all necessary accessories. The SPD shall compliance with IEC 61643-11 and certified by TUV,CE,ROHS,UL94V-O..				
10.102	OUTGOINGS				
10.103	14 Nos. 25A 4P 10kA MCB 'C' Curve				

S. No	DESCRIPTION	UNIT	QTY	RATE without GST	AMOUNT
10.104	AHU Panel-2 for First Floor as described above.	Set	1	71901.00	71901.00
10.105	AHU Panel-3,4,5&6 for 2nd to 5th Floor				
10.106	INCOMER				
10.107	1 Nos. 100A 4P MCCB built in Thermal based release (adjustable O/L,S/C,E/F) of fault breaking capacity 35KA (Ics=Icu=100%) upto 415V manually operated with extended rotary handle with castle lock for door interlock with Phase spreader & Phase Barriers at both sides. MCCB shall conforming to IS-1397-2 1993 as amended.				
10.108	METERING, INDICATOR AND RELAYS				
10.109	Multifunction meter should be of flush mounting 96 sq mm with alphanumeric LED display with all electrical measurement like VAF, KW,KWH & PHASE WISE energy monitoring through communication RS 485 port available with meter. MFM should have a wide measurement range of 10mA to 6A & sampling rate of 128 samples per cycle.. accuracy class of 1.0 with meter AUX supply 80--300v AC/DC.				
10.110	1Set of R,Y,B phase indication lamps with control MCB as per fault requirement for each Incomer.				
10.111	Provide 3Nos indicating lamps for status indication "ON","OFF" , Tripped due to earth fault on each incomer MCCB				
10.112	1Nos. 30-3000mA ELR with CBCT in incomer.				
10.113	TVSS AND BUS BARS FOR EACH SECTION				
10.114	150 Amps TP+50%N, 35kA, 500volts grade busbar chamber of suitable length with Aluminium busbars mount on SMC supports. All interconnections shall be as follows; a). Upto 63A, FRLS PVC insulated copper flexible colour coded wires b). 64Amp to 199Amp Copper Bus-bars and above aluminium, current density of bus-bars shall not be less than 0.8Amps/sq.mm for Aluminium and 1.6Amps/sq.mm for copper cross sectional area of Bus Bar.				
10.115	For each busbar: 1 No Surge protection device Type 2 (Class C), 4 Mode, MOV type suitable for 8/ 20µs surge,Voltage Protection level Up < 1.8kV, Operating Temperature -40 deg 'c' - +80 deg 'C', Connected Between 3Nos. phase to neutral and 1Nos. neutral to earth with discharge Current Imax. ≥ 40KA Per mode & In ≥ 20kA per Mode. SPD with 63A 4P HRC fuses of 100kA breaking capacity. For connecting SPD minimum 10sqmm copper wire must be used & length of connecting leads shall not be more than 500mm for per mode connection including all necessary accessories. The SPD shall compliance with IEC 61643-11 and certified by TUV,CE,ROHS,UL94V-O..				
10.116	OUTGOINGS				
10.117	12 Nos. 25A 4P 10kA MCB 'C' Curve				
10.118	AHU Panel-3,4,5&6 for 2nd to 5th Floor as described above.	Set	4	69636.00	278544.00
10.119	SDB-1 for Ground Floor (Light & Power)				
10.120	INCOMER				
10.121	1 Nos. 200A 4P MCCB built in microprocessor based release (adjustable O/L,S/C,E/F) of fault breaking capacity 35KA (Ics=Icu=100%) upto 415V manually operated with extended rotary handle with castle lock for door interlock with Phase spreader & Phase Barriers at both sides. MCCB shall conforming to IS-1397-2 1993 as amended.				
10.122	METERING, INDICATOR AND RELAYS				
10.123	Multifunction meter should be of flush mounting 96 sq mm with alphanumeric LED display with all electrical measurement like VAF, KW,KWH & PHASE WISE energy monitoring through communication RS 485 port available with meter. MFM should have a wide measurement range of 10mA to 6A & sampling rate of 128 samples per cycle.. accuracy class of 1.0 with meter AUX supply 80--300v AC/DC.				
10.124	1Set of R,Y,B phase indication lamps with control MCB as per fault requirement for each Incomer.				
10.125	Provide 3Nos indicating lamps for status indication "ON","OFF" , Tripped due to earth fault on each incomer MCCB				
10.126	1Nos. 30-3000mA ELR with CBCT in incomer.				
10.127	TVSS AND BUS BARS FOR EACH SECTION				
10.128	250 Amps TP+50%N, 35kA, 500volts grade busbar chamber of suitable length with Aluminium busbars mount on SMC supports. All interconnections shall be as follows; a). Upto 63A, FRLS PVC insulated copper flexible colour coded wires b). 64Amp to 199Amp Copper Bus-bars and above aluminium, current density of bus-bars shall not be less than 0.8Amps/sq.mm for Aluminium and 1.6Amps/sq.mm for copper cross sectional area of Bus Bar.				
10.129	For each busbar: 1 No Surge protection device Type 2 (Class C), 4 Mode, MOV type suitable for 8/ 20µs surge,Voltage Protection level Up < 1.8kV, Operating Temperature -40 deg 'c' - +80 deg 'C', Connected Between 3Nos. phase to neutral and 1Nos. neutral to earth with discharge Current Imax. ≥ 40KA Per mode & In ≥ 20kA per Mode. SPD with 63A 4P HRC fuses of 100kA breaking capacity. For connecting SPD minimum 10sqmm copper wire must be used & length of connecting leads shall not be more than 500mm for per mode connection including all necessary accessories. The SPD shall compliance with IEC 61643-11 and certified by TUV,CE,ROHS,UL94V-O..				
10.130	OUTGOINGS				
10.131	5 Nos. 125A 4P MCCB built in Thermal based release (adjustable O/L,S/C) of fault breaking capacity 25KA (Ics=Icu=100%) upto 415V manually operated with extended rotary handle with castle lock for door interlock with Phase spreader & Phase Barriers at both sides. MCCB shall conforming to IS-1397-2 1993 as amended.				
10.132	5 Nos. 32A DP 10kA MCB 'C' Curve				
10.133	4 Nos. 40A 4P 10kA MCB 'C' Curve				
10.134	7 Nos. 63A 4P 10kA MCB 'C' Curve				
10.135	SDB-1 for Ground Floor (Light & Power) as described above.	Set	1	157789.00	157789.00
10.136	SDB-2,3,4,5&6 for First to 5th Floor (Light & Power)				
10.137	INCOMER				
10.138	1 Nos. 200A 4P MCCB built in microprocessor based release (adjustable O/L,S/C,E/F) of fault breaking capacity 35KA (Ics=Icu=100%) upto 415V manually operated with extended rotary handle with castle lock for door interlock with Phase spreader & Phase Barriers at both sides. MCCB shall conforming to IS-1397-2 1993 as amended.				
10.139	METERING, INDICATOR AND RELAYS				
10.140	Multifunction meter should be of flush mounting 96 sq mm with alphanumeric LED display with all electrical measurement like VAF, KW,KWH & PHASE WISE energy monitoring through communication RS 485 port available with meter. MFM should have a wide measurement range of 10mA to 6A & sampling rate of 128 samples per cycle.. accuracy class of 1.0 with meter AUX supply 80--300v AC/DC.				
10.141	1Set of R,Y,B phase indication lamps with control MCB as per fault requirement for each Incomer.				
10.142	Provide 3Nos indicating lamps for status indication "ON","OFF" , Tripped due to earth fault on each incomer MCCB				
10.143	1Nos. 30-3000mA ELR with CBCT in incomer.				
10.144	TVSS AND BUS BARS FOR EACH SECTION				

S. No	DESCRIPTION	UNIT	QTY	RATE without GST	AMOUNT
10.145	250 Amps TP+50%N, 35kA, 500volts grade busbar chamber of suitable length with Aluminium busbars mount on SMC supports. All interconnections shall be as follows; a). Upto 63A, FRLS PVC insulated copper flexible colour coded wires b). 64Amp to 199Amp Copper Bus-bars and above aluminium, current density of bus-bars shall not be less than 0.8Amps/sq.mm for Aluminium and 1.6Amps/sq.mm for copper cross sectional area of Bus Bar.				
10.146	For each busbar: 1 No Surge protection device Type 2 (Class C), 4 Mode, MOV type suitable for 8/ 20µs surge,Voltage Protection level Up < 1.8kV, Operating Temperature -40 deg 'c' - +80 deg 'C', Connected Between 3Nos. phase to neutral and 1Nos. neutral to earth with discharge Current Imax. ≥ 40KA Per mode & In ≥ 20kA per Mode. SPD with 63A 4P HRC fuses of 100kA breaking capacity. For connecting SPD minimum 10sqmm copper wire must be used & length of connecting leads shall not be more than 500mm for per mode connection including all necessary accessories. The SPD shall compliance with IEC 61643-11 and certified by TUV,CE,ROHS,UL94V-O..				
10.147	OUTGOINGS				
10.148	5 Nos. 125A 4P MCCB built in Thermal based release (adjustable O/L,S/C) of fault breaking capacity 25KA (Ics=Icu=100%) upto 415V manually operated with extended rotary handle with castle lock for door interlock with Phase spreader & Phase Barriers at both sides. MCCB shall conforming to IS-1397-2 1993 as amended.				
10.149	4 Nos. 32A DP 10kA MCB 'C' Curve				
10.150	4 Nos. 40A 4P 10kA MCB 'C' Curve				
10.151	6 Nos. 63A 4P 10kA MCB 'C' Curve				
10.152	SDB-2,3,4,5&6 for First to 5th Floor (Light & Power) as described above.	Set	5	158380.00	791900.00
10.153	UPS Output Panel located in UPS Room				
10.154	INCOMER				
10.155	2 Nos. 200A TP+200%N MCCB built in microprocessor based release (adjustable O/L,S/C,E/F) of fault breaking capacity 35KA (Ics=Icu=100%) upto 415V manually operated with extended rotary handle with castle lock for door interlock with Phase spreader & Phase Barriers at both sides. MCCB shall conforming to IS-1397-2 1993 as amended.				
10.156	Vacant Space for 1 No. 200A TP+200%N MCCB built in microprocessor based release (adjustable O/L,S/C,E/F) of fault breaking capacity 25KA (Ics=Icu=100%) upto 415V manually operated with extended rotary handle with castle lock for door interlock with Phase spreader & Phase Barriers at both sides. MCCB shall conforming to IS-1397-2 1993 as amended.				
10.157	METERING, INDICATOR AND RELAYS				
10.158	Multifunction meter should be of flush mounting 96 sq mm with alphanumeric LED display with all electrical measurement like VAF, KW,KWH & PHASE WISE energy monitoring through communication RS 485 port available with meter. MFM should have a wide measurement range of 10mA to 6A & sampling rate of 128 samples per cycle.. accuracy class of 1.0 with meter AUX supply 80--300v AC/DC.				
10.159	1Set of R,Y,B phase indication lamps with control MCB as per fault requirement for each Incomer.				
10.160	Provide 3Nos indicating lamps for status indication "ON","OFF" , Tripped due to earth fault on each incomer MCCB				
10.161	1Nos. 30-3000mA ELR with CBCT in incomer.				
10.162	TVSS AND BUS BARS FOR EACH SECTION				
10.163	600 Amps TP+200%N, 25kA, 500volts grade busbar chamber of suitable length with Copper busbars mount on SMC supports. All interconnections shall be as follows; a). Upto 63A, FRLS PVC insulated copper flexible colour coded wires b). and above Copper Bus-bars and, current density of bus-bars shall not be less than 1.6Amps/sq.mm for copper cross sectional area of Bus Bar.				
10.164	For each busbar: 1 No Surge protection device Type 2 (Class C), 4 Mode, MOV type suitable for 8/ 20µs surge,Voltage Protection level Up < 1.8kV, Operating Temperature -40 deg 'c' - +80 deg 'C', Connected Between 3Nos. phase to neutral and 1Nos. neutral to earth with discharge Current Imax. ≥ 40KA Per mode & In ≥ 20kA per Mode. SPD with 63A 4P HRC fuses of 100kA breaking capacity. For connecting SPD minimum 10sqmm copper wire must be used & length of connecting leads shall not be more than 500mm for per mode connection including all necessary accessories. The SPD shall compliance with IEC 61643-11 and certified by TUV,CE,ROHS,UL94V-O..				
10.165	OUTGOINGS				
10.166	8 Nos. 125A 4P MCCB built in Thermal based release (adjustable O/L,S/C) of fault breaking capacity 25KA (Ics=Icu=100%) upto 415V manually operated with extended rotary handle with castle lock for door interlock with Phase spreader & Phase Barriers at both sides. MCCB shall conforming to IS-1397-2 1993 as amended.				
10.167	4 Nos. 63A 4P 10kA MCB 'D' Curve				
10.168	UPS Output Panel located in UPS Room as described above.	Set	1	293122.00	293122.00
10.169	UPS SDB-1,2,3,4,5&6 for Gr to 5th Floor (Light & Power)				
10.170	INCOMER				
10.171	1 Nos. 125A 4P MCCB built in Thermal based release (adjustable O/L,S/C,E/F) of fault breaking capacity 25KA (Ics=Icu=100%) upto 415V manually operated with extended rotary handle with castle lock for door interlock with Phase spreader & Phase Barriers at both sides. MCCB shall conforming to IS-1397-2 1993 as amended.				
10.172	METERING, INDICATOR AND RELAYS				
10.173	Multifunction meter should be of flush mounting 96 sq mm with alphanumeric LED display with all electrical measurement like VAF, KW,KWH & PHASE WISE energy monitoring through communication RS 485 port available with meter. MFM should have a wide measurement range of 10mA to 6A & sampling rate of 128 samples per cycle.. accuracy class of 1.0 with meter AUX supply 80--300v AC/DC.				
10.174	1Set of R,Y,B phase indication lamps with control MCB as per fault requirement for each Incomer.				
10.175	Provide 3Nos indicating lamps for status indication "ON","OFF" , Tripped due to earth fault on each incomer MCCB				
10.176	1Nos. 30-3000mA ELR with CBCT in incomer.				
10.177	TVSS AND BUS BARS FOR EACH SECTION				
10.178	200 Amps TP+50%N,25kA, 500volts grade busbar chamber of suitable length with Aluminium busbars mount on SMC supports. All interconnections shall be as follows; a). Upto 63A, FRLS PVC insulated copper flexible colour coded wires b). 64Amp to 199Amp Copper Bus-bars and above aluminium, current density of bus-bars shall not be less than 0.8Amps/sq.mm for Aluminium and 1.6Amps/sq.mm for copper cross sectional area of Bus Bar.				
10.179	For each busbar: 1 No Surge protection device Type 2 (Class C), 4 Mode, MOV type suitable for 8/ 20µs surge,Voltage Protection level Up < 1.8kV, Operating Temperature -40 deg 'c' - +80 deg 'C', Connected Between 3Nos. phase to neutral and 1Nos. neutral to earth with discharge Current Imax. ≥ 40KA Per mode & In ≥ 20kA per Mode. SPD with 63A 4P HRC fuses of 100kA breaking capacity. For connecting SPD minimum 10sqmm copper wire must be used & length of connecting leads shall not be more than 500mm for per mode connection including all necessary accessories. The SPD shall compliance with IEC 61643-11 and certified by TUV,CE,ROHS,UL94V-O..				
10.180	OUTGOINGS				
10.181	3 Nos. 40A DP 10kA MCB 'D' Curve				
10.182	3 Nos. 40A 4P 10kA MCB 'D' Curve				

S. No	DESCRIPTION	UNIT	QTY	RATE without GST	AMOUNT
10.183	6 Nos. 63A 4P 10kA MCB 'D' Curve				
10.184	UPS SDB-1,2,3,4,5&6 for Gr to 5th Floor (Light & Power) as described above.	Set	6	80766.00	484596.00
10.185	EXTERNAL LIGHTING PANEL-EX1 (OUTDOOR PANEL-IP:65)				
10.186	Incomer				
10.187	1 Nos. 63A 4P MCCB built in Thermal based release (adjustable O/L,S/C) of fault breaking capacity 25KA (Ics=Icu=100%) upto 415V manually operated with extended rotary handle with castle lock for door interlock with Phase spreader & Phase Barriers at both sides. MCCB shall conforming to IS-1397-2 1993 as amended.				
10.188	1Set of R,Y,B phase indication lamps with control MCB as per fault requirement for each Incomer.				
10.189	Busbars				
10.190	3Nos. SPN copper insulated bus bars link of minimum of 100Amps				
10.191	Digital Astro-time with 230V AC supply & operating range of 184...264V AC & shall have contact rating of 1CO(SPDT), 16A/250V AC with AgSnO2 contact material and in- built minimum 6 years battery back up. Switching of loads shall be as per Astro-program i.e. calculation of sunrise and sunset times through date, time and location coordinates. It shall also have the provision for calculation of sunrise and sunset times by programming through 2 digits of initial PIN / POSTAL codes. It shall have an option of Astro ON period override by time switch and Offset function which allows programming of switching times offset from the astronomic time (by up to 90 min, in 10 min steps). It shall have LCD status indication with back light display along with internal easily replaceable battery on the front side for set-up and programming. It shall be suitable for "Smart" mode 4 digit protected programming via smartphones with NFC communication.				
10.192	Outgoings				
10.193	3 Nos. 63A DP 100mA RCCB one per phase				
10.194	3 Nos. 63A, DP Contactor one per phase with wide band coil and 1Set of Auto/Manual Selector Switch, start/stop push button, and ON/OFF indicators with each contactor				
10.195	18 Nos. 6-16A, SP MCB 10kA 'C' Curve				
10.196	1 No. 32A single phase industrial socket backed up 32A, SP MCB connected after main incomer				
10.197	For each busbar: 1 No Surge protection device Type 2 (Class C), 4 Mode, MOV type suitable for 8/ 20µs surge,Voltage Protection level Up < 1.8kV, Operating Temperature -40 deg 'c' - +80 deg 'C', Connected Between 3Nos. phase to neutral and 1Nos. neutral to earth with discharge Current Imax. ≥ 40KA Per mode & In ≥ 20kA per Mode. SPD with 63A 4P HRC fuses of 100kA breaking capacity. For connecting SPD minimum 10sqmm copper wire must be used & length of connecting leads shall not be more than 500mm for per mode connection including all necessary accessories. The SPD shall compliance with IEC 61643-11 and certified by TUV,CE,ROHS,UL94V-O..				
10.198	MS Stand of 450mm height to be provided with black painted.				
10.199	EXTERNAL LIGHTING PANEL-EX1 (OUTDOOR PANEL) as described above and shown in SLD.	Set	1	118687.00	118687.00
10.200	Design, Manufacture, Supplying, loading & unloading assembling at site, installation, fixing on the position,testing & commissioning of wall mounted, the indoor cubical type IP:44, dead front, 1.6mm thick powder coated CRCA sheet steel enclosed, 1 Nos. 200 4P MCCB built in thermal magnetic based release (fixed O/L & fixed S/C) of fault breaking capacity 25KA (Ics=Icu=100%) upto 415V manually operated with door Knob for door interlock with Phase Barriers at both sides. MCCB shall conforming to IS-1397-2 1993 as amended.	Set	2	59097.00	118194.00
11	L.T./ CONTROL CABLES				
11.1	Supply of following sizes of Power Cables multi stranded Aluminium conductor, XLPE Insulated , cores laid up PVC tape / Extruded Inner sheath , Armour, FRLS at outer sheath,1100V grade as per IS 7098(Part 1) 1988 with upto date amendments.				
11.1.1	4x 16 sq.mm.	RM	2850	188.00	535800.00
11.1.2	4x 25 sq.mm.	RM	187	247.00	46189.00
11.1.3	3.5 x 35 sq.mm.	RM	33	280.00	9240.00
11.1.4	3.5 x 120 sq.mm.	RM	50	800.00	40000.00
11.1.5	3.5 x 70 sq.mm.	RM	650	493.00	320450.00
11.1.6	3.5 x 95 sq.mm.	RM	550	615.00	338250.00
11.1.7	3.5 x 185 sq.mm.	RM	850	1157.00	983450.00
11.1.8	3.5 x 300 sq.mm.	RM	4770	1787.00	8523990.00
11.2	Supply of following sizes of Power Cables multi stranded Copper conductor, XLPE Insulated , cores laid up PVC tape / Extruded Inner sheath , Armour, FRLS at outer sheath,1100V grade as per IS 7098(Part 1) 1988 with upto date amendments.				
11.2.1	4x 4 sq.mm.	RM	1452	279.00	405108.00
11.2.2	4x 6 sq.mm.	RM	2844	411.00	1168884.00
11.2.3	4x 10 sq.mm.	RM	1744	653.00	1138832.00
11.2.4	2x 6 q.mm.	RM	1980	229.00	453420.00
11.3	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.				
11.3.1	Upto 35 sq. mm (clamped with 1mm thick saddle)	Meter	10275	39.00	400725.00
11.3.2	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)	Meter	1453	80.00	116240.00
11.3.3	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)	Meter	1090	100.00	109000.00
11.3.4	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)	Meter	2376	162.00	384912.00
11.4	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 kV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc. as required.				
11.4.1	Upto 35 sq. mm (clamped with 1mm thick saddle)	Meter	1188	337.00	400356.00
11.4.2	Above 185 sq. mm and upto 400 sq. mm	Meter	3564	415.00	1479060.00
11.5	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				
11.5.1	3½ X 35 sq. mm (32mm)	Each	2	323.00	646.00
11.5.2	3½ X 120 sq. mm (45 mm)	Each	4	537.00	2148.00
11.5.3	3½ X 70 sq. mm (38mm)	Each	12	410.00	4920.00
11.5.4	3½ X 95 sq. mm (45 mm)	Each	12	515.00	6180.00
11.5.5	3½ X 185 sq. mm (57mm)	Each	16	767.00	12272.00
11.5.6	3½ X 300 sq. mm (70 mm)	Each	36	1047.00	37692.00
11.5.7	4 X 16 sq. mm (28mm)	Each	110	270.00	29700.00
11.5.8	4 X 25 sq. mm (28mm)	Each	6	276.00	1656.00
11.6	Supplying and making end termination with brass compression gland and copper lugs for following size of PVC insulated and PVC sheathed / XLPE copper conductor cable of 1.1 KV grade as required.				
11.6.1	4C X 4 sq. mm (19mm)	Each	56	251.00	14056.00
11.6.2	4C X 6 sq. mm (19mm)	Each	884	251.00	221884.00
11.6.3	4 X 10 sq. mm (25 mm)	Each	72	254.00	18288.00
11.6.4	2 X 6 sq. mm (19 mm)	Each	74	251.00	18574.00

S. No	DESCRIPTION	UNIT	QTY	RATE without GST	AMOUNT
11.7	Supplying and drawing of following sizes of 1.1kV grade Single core FRLS PVC insulated Single core unsheathed Industrial Flexible Cable conforming to IS:694/1990 and IS: 732 for installation with Flexible Bright annealed copper conductor for 1.1kV voltage grade in the existing Cable Tray/ Raceway as required.				
11.7.1	1 x 6 sq. mm	Meter	1050	126.00	132300.00
11.7.2	1 x 10 sq. mm	Meter	126	191.00	24066.00
11.7.3	1 x 50 sq. mm	Meter	168	762.00	128016.00
11.7.4	1 x 95 sq. mm	Meter	297	1394.00	414018.00
11.8	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering etc., complete as required.				
11.8.1	63 mm dia (OD-63 mm & ID-51 mm nominal)	Meter	800	216.00	172800.00
11.8.2	90 mm dia (OD-90 mm & ID-76 mm nominal)	Meter	50	254.00	12700.00
11.8.3	120 mm dia (OD-120 mm & ID-103 mm nominal)	Meter	50	322.00	16100.00
11.8.4	160 mm dia (OD-160 mm & ID-135 mm nominal)	Meter	50	421.00	21050.00
11.8.5	200 mm dia (OD-200 mm & ID-175 mm nominal)	Meter	1500	585.00	877500.00
12	SOLAR SYSTEM				
12.1	Supply, Installation, Testing and Commissioning of ongrid Solar Photovoltaic Power Plant conforming to MNRE specifications as amended, consisting of Mono/Poly Crystalline silicon solar cells, net metering facility, necessary protections, earthing, mounted on Aluminium/GI structure of suitable strength with following components complete as required:- a) Solar Photovoltaic Module of capacity 330 Wp or above, manufactured in India, conforming to IS 14286/IEC 61215, IS/IEC 61730-Part-1, IS/IEC 61730-Part-2. Solar Photovoltaic Module conversion efficiency shall not be less than 16.5%. PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years. b) Power Conditioning Unit (PCU) of 350-800 V DC Input voltage range and 400 V AC, three phase, 4 wire, 50Hz +/- 2.5 Hz, output voltage suitable to generate AC Power with efficiency not less than 97%, total harmonic distortion less than 3% and suitable for ambient temperature from 0 to 50 degree C. The PCU shall adjust the voltage and frequency level to suit the Grid Voltage Frequency. c) Data Monitoring System complete with accessories. d) Fixing of Array junction box & Main junction box with IP 65 protection and termination arrangement for incoming and outgoing cable along with glands, lugs and other accessories etc. as required. e) Lightning and surge voltage protection. f) Connections & Interconnections by supplying & fixing required size XLPE insulated copper conductor 1.1 kV grade armoured power and control cables between solar modules, main power cable to grid supply PCU unit along with supplying & fixing of necessary channel/conduit lugs and other accessories etc. as required.	kWp	175	46942.00	8214850.00
13	PUBLIC ADDRESS SYSTEM				
13.1	Supplying, installation, testing & commissioning of 6 zone, voice alarm controller with USB, MP3 player (including 6 zone button paging station) with seamless integration facility with main fire alarm panel for voice evacuation complete as required.	Each	1	110838.00	110838.00
13.2	Supplying, installation, testing & commissioning of 1.5/3/6W ceiling speaker complete as required.	Each	57	846.00	48222.00
13.3	Supplying, installation, testing & commissioning of digital audio amplifier 75 Watt, 25V rms operating at 240 Volt AC Supply complete as required.	Each	5	127833.00	639165.00
13.4	Supplying, installation, testing & commissioning command keypad 6 zone, with microphone complete as required.	Each	1	71684.00	71684.00
13.5	Supplying and drawing of cable Fire Retardant PVC insulated copper conductor cable in the existing surface / recessed steel conduit of following pairs, cores and size including connections and interconnections etc. as required.				
13.5.1	speaker cable Single pair, 2-core, 1.5 sqmm	Meter	1418	47.00	66646.00
13.6	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.				
13.6.1	25 mm	Meter	1418	224.00	317632.00
14	UPS SYSTEM				
14.1	Supply, installation, testing and commissioning of 100kVA/ 90kW (Input 3Phase / Output 3Phase) Compact Floor Mount Type design UPS, conforming to IEC EN 62040 (All Parts), ISO 9001 certified, true online double conversion, IGBT on the input and output with multiple digital signal processor controlled for Rectifier/ charger and IGBT Inverter, Static Switch with parallel redundant compatible with 0.7 lagging to 0.9 leading PF loads without deration. UPS should have Bi-directional converters. The Input power factor 0.99 @ 100% load, THDi <5%, Input voltage 340-475V, Output voltage 400V, 50Hz frequency, efficiency 94%, 0-40 deg C (without deration), with inbuilt overload, short circuit, Input low voltage, output over voltage, battery over charging, battery over discharging protections, parallel communication port, RS232, USB, EPO and SNMP (Cybersecurity enhancements for IEC & UL 2900-2-2 certification) interface, BMS interface, Dust Filter at Air Inlet point. VRLA-SMF (12V) batteries with MS Fabstem with open protocol BACnet/ Modbus over IP complete as per specifications. ivity of less than 0.12 ohm-mtr. The grounding minerals should be ROHS certified to ensure it does not pollute the ground water as per technical specification attached.93mm & Weight including all accessories should not be more than 1.5Kg. liant with LM80-08 standard with L70 life of 50000 Hrs tested at maximum current (Complete LM 80 test report for LED should be submitted for 10000 hrs of testing). The LEDs used should be with CCT of 5700 K, CRI of Minimum 70 and SDCM of < 5. LEDs must be driven at max 70% of the rated current. MCPCB with Aluminium core and copper thickness of 35 micron to be used for LED mounting. LED Driver shall be silicone potted, Integrated type, Isolated, Constant Current with range 150-300V AC.	Nos.	2	1817567.00	3635134.00
15	CCTV SYSTEM				

S. No	DESCRIPTION	UNIT	QTY	RATE without GST	AMOUNT
15.1	Supply, installation and commissioning of 4MP IP Dome camera Image Sensor 1/2.7" Signal System PAL/NTSC Min. Illumination Color: 0.002Lux@ (F2.0, ACG ON), B/W: 0Lux with IR Shutter Time 1s to 1/100,000s Day & Night Dual IR Cut Filter with Auto Switch Wide Dynamic Range DWDR Angle Adjustment Pan 0~340°, tilt 0~75°, roate 0~360° LENS Lens Type Fixed Focus 2.8mm Lens Mount M12 Aperture F1.6, Fixed FOV Horizontal 103.4° ; Vertical; Video Compression IH+265/H.265/H.264 Video Bit Rate 32Kbps~6Mbps Audio Compression G.711/G.711U/ADPCM Audio Bit Rate 8K~48Kbps; Max. Resolution 2560×1440 Main Stream PAL: 25fps (2560x1440, 2304x1296, 1920x1080, 1280x720) NTSC: 30fps (2560x1440, 2304x1296, 1920x1080, 1280x720) Sub Stream PAL: 25fps (704x576, 704x288, 640x360, 352x288) NTSC: 30fps (704x480, 704x240, 640x360, 352x240) Image Setting Saturation, brightness, contrast, sharpness, adjustable by client software or web browser Image Enhancement BLC/3D DNR/HLC OSD 16x16, 32x32, 48x48, 64x64, adaptable size, Letters Such as Week, Date, Time, Total 3 Regions Privacy Mask Yes, 4 regions Smart Defog Yes; Alarm Trigger Motion Detection, Mask Alarm, IP Address Conflict; Video Analytics Tripwire, Perimete; Protocols TCP/IP, HTTP, FTP, DHCP, DNS, DDNS, MULTICAST, IPV4, NTP, UDP, Telnet, ICMP, RTP, RTSP, UPnP System Compatibility ONVIF (PROFILE S/T/G), SDK Remote Connection<=7; Communication Interface 1 RJ45 10M/100M self adaptive Ethernet port Audio I/O Mic in; Web Client Language English Operating Conditions O O -30 C ~ 60 C, 0 ~ 95% RH Power Supply DC 12V±25%, PoE (802.3af) Power Consumption MAX: 6W (12V) MAX: 8W (PoE) Protection IP66, Lightning protection, surge protection.	Nos.	41	7469.00	306229.00
15.2	Supply, installation and commissioning of 4MP IP Bullet camera image Sensor 1/2.7" CMOS Signal System PAL/NTSC Min. Illumination Color: 0.002Lux@ (F1.6, ACG ON), B/W: 0Lux with IR Shutter Time 1s to 1/100,000s Day & Night Dual IR Cut Filter with Auto Switch Wide Dynamic Range 120dB Angle Adjustment Bracket, pan 0~360°, tilt 0~75°, roate 0~360° LENS Lens Type Fixed Focus 4mm Lens Mount M12 Aperture F1.6, Fixed FOV Horizontal field of view 88.2°(4mm) ; Vertical field of view: 46.4°(4mm) ILLUMINATOR IR LEDs 2 IR Range Up to 50m Wavelength 850nm; COMPRESSION STANDARD Video Compression IH+265/H.265/H.264 Video Bit Rate 32Kbps~6Mbps Audio Compression G.711/G.711U/ADPCM Audio Bit Rate 8K~48Kbps IMAGE Max. Resolution 2560×1440 Main Stream PAL: 25fps (2560x1440, 2304x1296, 1920x1080, 1280x720) NTSC: 30fps (2560x1440, 2304x1296, 1920x1080, 1280x720) Sub Stream PAL: 25fps (704x576, 704x288, 640x360, 352x288) NTSC: 30fps (704x480, 704x240, 640x360, 352x240) Image Setting Saturation, brightness, contrast, sharpness, adjustable by client software or web browser Image Enhancement BLC/3D DNR/HLC OSD 16x16, 32x32, 48x48, 64x64, adaptable size, Letters Such as Week, Date, Time, Total 3 Regions Privacy Mask Yes, 4 regions Smart Defog Yes FEATURE Alarm Trigger Motion Detection, Mask Alarm, IP Address Conflict Video Analytics Tripwire, Perimeter NETWORK Protocols TCP/IP, HTTP, FTP, DHCP, DNS, DDNS, MULTICAST, IPV4, NTP, UDP, Telnet, ICMP, RTP, RTSP, UPnP System Compatibility ONVIF (PROFILE S/T/G), SDK Remote Connection ≤7 Client IH-VIEW Web Version Web5 INTERFACE Communication Interface 1 RJ45 10M/100M self adaptive Ethernet port Audio I/O Mic in GENERAL Web Client Language English Operating Conditions -30o C~60o C, 0~95% RH Power Supply DC 12V±25%, PoE (802.3af) Power Consumption MAX: 6W(12V) MAX: 8W(POE) Protection IP67, Lightning protection, surge protection.	Nos.	12	7637.00	91644.00
15.3	Supply and installation of project series Network Video Recorder, support 64 Channel, Should support Resolution:- greater than equal to 12 MP IP Camera, Network Bandwidth incoming 640 Mbps and outgoing 640 Mbps for access, support for H.265+/H.265/H.264 encoding format streaming access and decoding output, Recording play back quality: 16 ch play back simultaneously, Recording resolution up to 12MP, Recording mode: support manual, Auto, Motion detection, Alarm, trigger record mode, Operation way: Mouse, local Login: Username and password, Recording storage: Local HDD, network, Video output: HDMI/VGA/TV, Support min. 8 SATA HDDs , Each port supports min. 18TB HDD(Enterprise class),support-RAID0, RAID1, RAID5, RAID6, RAID10,Support dual Gigabit Ethernet ports,Supports 4 HDMI outputs,Alarm Input/out:16 in /4 out ,Audio:1 in / 1 out ,Supports intelligent analytics such as Licence plate detection,Face Recognition,Human&Vehicle Detection,Perimeter Intrusion Detection,Line Crossing Detection, Cross Counting,Stationary Object Detection,Heat Map,Crowd Density Detection,Queue Length Detection, Rare Sound Detection, product must comply with NDAA complainece, Certification: BIS,CE,FCC,ROHS	Nos.	2	87275.00	174550.00
15.4	SITC of 10TB Surveillance SATA External Hard Drive for CCTV Surveillance and security purpose, prioritized write-operations for maximized surveillance performance, Support- minimum up to 180 TB per year work load rate, more than eight bays, TLER and ATA streaming, Tuned for write-intensive, low bit-rate, high stream-count applications typical to most surveillance.	Nos.	6	39442.00	236652.00
15.5	Supply, Installation, Testing and Commissioning of LED Display Monitor 55" high resolution, Diagonal size :55", Type 60 Hz LED BLU, Resolution 1,366 x 768 (16:9), Brightness 330 nit, Contrast ratio 4,000:1, Display colors 16.7 M, Dynamic C/R 50,000:1 (AV mode), Connectivity HDMI, VGA, Power supply AC 100 - 240 V ~ (+/- 10%), 50/60 Hz, Operating temperature 0°C - 40°C (32°F - 104°F), Built-in speaker (10 W + 10 W), PIP/PBP, narrow bezel, light weight, RS-232C in/out 1 D-sub and 1 HDMI, no function key, 3 Star Rating complete in all respects.	Nos.	2	98184.00	196368.00
15.6	Supply, Installation, testing and commissioning of 24 Port Gigabit POE Switch 195 Watts Each Port Supports 30 Watts (802.3at) with 4 Gigabyte SFP Port ,24 Port Full Gigabit Power Over Ethernet with switching capacity 56 Gbps Auto Mac Address Learning and Aging 4 Port Uplink, LED Indigators for Monitoring power, link, activity and speed.	Nos.	6	77541.00	465246.00
15.7	Supply, Installation, testing and commissioning of 24 Port Gigabit POE Switch 375 Watts Each Port Supports 30 Watts (802.3at) with 4 Gigabyte SFP Port ,24 Port Full Gigabit Power Over Ethernet with switching capacity 56 Gbps Auto Mac Address Learning and Aging 4 Port Uplink, LED Indigators for Monitoring power, link, activity and speed.	Nos..	1	116814.00	116814.00
15.8	Supply, Installation, Testing, Commissioning of 1G Small Form-Pluggable (SFP) form factor transceiver, support operating temperature up to 70°C and compatible with quoted switches.	Nos..	14	15303.00	214242.00

S. No	DESCRIPTION	UNIT	QTY	RATE without GST	AMOUNT
15.9	Supply, Installation, testing and commissioning of 24 port Unshielded Cat 6A 19" UTP Copper Jack Patch Panel (loaded) on 1U and supports universal wiring T568 A or B wiring pattern including grounding bolt, cage nuts and rear cable manager. Each port of the panel is numbered and as a designate label area for clear port identification complete as required.	Nos.	7	13328.00	93296.00
15.10	Supply, Installation, testing and commissioning of Cat6A UTP 24 AWG stranded bare copper conductor 1M Patch Cord of following length of PE insulation and LSZH outer sheath and terminated with shielded/ unshielded RJ-45 modular plugs on both ends and having high grade 50Micron gold plated RJ 45 connectors with Transparent strain relief boot The patch cords shall be conforming to Catagory 6, ANSI/ TIA/ EIA-568-B.2:2002 and RoHS/ REACH standards.	Nos.	60	444.00	26640.00
15.11	Supplying, wiring & connecting CCTV with UTP 4 pair CAT- 6A cable in existing conduits / raceways / trunking including connections etc. as required.	Meter	3150	64.00	201600.00
15.12	Supply and fixing of CAT6A Connectors (Box of 100 Pcs.)	Nos.	2	3455.00	6910.00
15.13	Supply, Installation, Testing, Commissioning of 12 Core Matched Cladding Single Mode Fibre Cable Should fulfil the requirements of: IEC 793-2: 1992, EN 188101 and ITU-T Recommendation G.652 is optimized for operation at 1310 nm and at 1550 nm as per technical specification.	Meter	882	175.00	154350.00
15.14	Supply, Installation, Testing, Commissioning of 48 Port Fibre Patch Panel Have sufficient slots accommodate Simplex/duplex SC/LC/FC adapters individually, Should have Splice Tray & Cable Spool provision inside, along with Accessory kit consists of cable ties, mounting ear screw earthing and spiral wrap tube, 48 LC,24SC,24 ST and 24 FC Terminations as per technical Specification.	Nos.	2	18659.00	37318.00
15.15	Supply, Installation, Testing, Commissioning of 12 Port Fibre Patch Panel Have sufficient slots accommodate Simplex/duplex SC/LC/FC adapters individually, Should have Splice Tray & Cable Spool provision inside, along with Accessory kit consists of cable ties, mounting ear screw earthing and spiral wrap tube, 48 LC,24SC,24 ST and 24 FC Terminations as per technical Specification.	Nos.	12	13328.00	159936.00
15.16	Supply, Installation, Testing Commissioning of 3M optical fibre patch leads shall comprise of Single mode 9/125µm fibre with SC/LC/FC, fibre connectors terminated at each end as per technical specification.	Nos.	8	2608.00	20864.00
15.17	"Supply Installation Testing & Commissioning of 24 U Rack for server NVR, floor Mounted,Fan 230 VAC (Directly Mounted on Top Panel), Cable Manager (MS),Set of Hardware Front pannel, Set of Anchor Fashner, PDU 5 Points 5 Amp. Socket and all nessesery accessories.	Nos.	1	38292.00	38292.00
15.18	"Supply Installation Testing & Commissioning of 9 U Rack for PoE Switch and Patch Panel , Wall Mounted, Single Section(Along with Front Glass Door Lockable),Fan 230 VAC (Directly Mounted on Top Panel), Cable Manager (MS),Set of Hardware Front pannel, Set of Anchor Fashner, PDU 5 Points 5 Amp. Socket and all nessesery accessories.	Nos.	6	16616.00	99696.00
15.19	Supplying and fixing of following sizes 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.				
15.19.1	25 mm	Meter	945	127.00	120015.00
16	DATA NETWORKING SYSTEM				
16.1	Supply installation testing and commissioning of CAT6A RJ45 I/O's with 8P 8C 50u jack, compatible to T568A and T568B wiring.	Nos.	725	361.00	261725.00
16.2	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.				
16.2.1	1 or 2 Module (75 mmX75 mm)	Each	1003	261.00	261783.00
16.2.2	3 Module (100 mmX75 mm)	Each	20	286.00	5720.00
16.2.3	4 Module (125 mmX75 mm)	Each	10	300.00	3000.00
16.3	Supply, Installation, testing and commissioning of Layer 3 core switch , 24 x 10/100/1000BASE-T ports Gigabit Non-POE Switch with 4 x Gigabit SFP ports.	Nos.	1	226580.00	226580.00
16.4	Supply, Installation, testing and commissioning of 48 x 10/100/1000BASE-T ports Gigabit Non-POE Switch with 4 x Gigabit SFP ports, Advanced L2 switching and security features, minimum L2+ Static Routing, minimum switching capacity upto 176 Gbps, with Maximum Packet Forwarding Rate 14.88 Mpps, including IGMP snooping, port mirroring, Spanning Tree Protocol (STP), and Link Aggregation Control Protocol (LACP).	Nos.	18	75527.00	1359486.00
16.5	Supply, Installation, testing and commissioning of 48 port Unshielded Cat 6A 19" UTP Copper Jack Patch Panel (loaded) on 1U and supports universal wiring T568 A or B wiring pattern including grounding bolt, cage nuts and rear cable manager. Each port of the panel is numbered and as a designate label area for clear port identification complete as required.	Nos.	18	29125.00	524250.00
16.6	Supply, Installation, Testing, Commissioning of 1G Small Form-Pluggable (SFP) form factor transceiver, support operating temperature up to 70°C and compatible with quoted switches.	Nos.	40	15303.00	612120.00
16.7	"Supply Installation Testing & Commissioning of 18U Rack for Switch and Patch Panel , Wall Mounted, Single Section(Along with Front Glass Door Lockable),Fan 230 VAC (Directly Mounted on Top Panel), Cable Manager (MS),Set of Hardware Front pannel, Set of Anchor Fashner, PDU 5 Points 5 Amp. Socket and all nessesery accessories. (For DNS AND IPBAX Both)	Nos.	6	32383.00	194298.00
16.8	Supplying, wiring & connecting of UTP 4 pair CAT- 6A cable in existing conduits / raceways / trunking including connections etc. as required. (For DNS AND IPBAX Both)	Meter	39905	64.00	2553920.00
16.9	Supply, Installation, testing and commissioning of Cat6A UTP 24 AWG stranded bare copper conductor 1M Patch Cord of following length of PE insulation and LSZH outer sheath and terminated with shielded/ unshielded RJ-45 modular plugs on both ends and having high grade 50Micron gold plated RJ 45 connectors with Transparent strain relief boot The patch cords shall be conforming to Catagory 6, ANSI/ TIA/ EIA-568-B.2:2002 and RoHS/ REACH standards. (At Rack Side)	Nos.	725	439.00	318275.00
16.10	Supply, Installation, testing and commissioning of Cat6A UTP 24 AWG stranded bare copper conductor 2M Patch Cord of following length of PE insulation and LSZH outer sheath and terminated with shielded/ unshielded RJ-45 modular plugs on both ends and having high grade 50Micron gold plated RJ 45 connectors with Transparent strain relief boot The patch cords shall be conforming to Catagory 6, ANSI/ TIA/ EIA-568-B.2:2002 and RoHS/ REACH standards.(At User Side)	Nos.	743	489.00	363327.00
16.11	Supply and fixing of CAT6A Connectors (Box of 100 Pcs.) (For DNS AND IPBAX)	Nos.	20	3455.00	69100.00
16.12	Supply, Installation, Testing, Commissioning of 12 Core Matched Cladding Single Mode Fibre Cable Should fulfil the requirements of: IEC 793-2: 1992, EN 188101 and ITU-T Recommendation G.652 is optimized for operation at 1310 nm and at 1550 nm as per technical specification.	Meter	1008	175.00	176400.00
16.13	Supply, Installation, Testing, Commissioning of 48 Port Fibre Patch Panel Have sufficient slots accommodate Simplex/duplex SC/LC/FC adapters individually, Should have Splice Tray & Cable Spool provision inside, along with Accessory kit consists of cable ties, mounting ear screw earthing and spiral wrap tube, 48 LC,24SC,24 ST and 24 FC Terminations as per technical Specification.	Nos.	2	18659.00	37318.00
16.14	Supply, Installation, Testing, Commissioning of 12 Port Fibre Patch Panel Have sufficient slots accommodate Simplex/duplex SC/LC/FC adapters individually, Should have Splice Tray & Cable Spool provision inside, along with Accessory kit consists of cable ties, mounting ear screw earthing and spiral wrap tube, 48 LC,24SC,24 ST and 24 FC Terminations as per technical Specification.	Nos.	12	13328.00	159936.00
16.15	Supply, Installation, Testing Commissioning of 3M optical fibre patch leads shall comprise of Single mode 9/125µm fibre with SC/LC/FC, fibre connectors terminated at each end as per technical specification.	Nos.	40	2608.00	104320.00
16.16	Supplying and fixing of following sizes 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.				

S. No	DESCRIPTION	UNIT	QTY	RATE without GST	AMOUNT
16.16.1	25 mm	Meter	7981	127.00	1013587.00
17	IP-PBX SYSTEM				
17.1	Supply installation testing and commissioning of The EPABX/Communication System shall compatible of IP & Analog extensions and 100% non-blocking, System with flexible universal slots, Inbuilt Auto attendant facility, Minimum 15 Nos. conference, Analog extension line, Calling GSM, E&M line, PRI / E1 & VOIP program through Analog telephone digital key from Ethernet, public address cord, shall have unrestricted simultaneous dialing facility, QSIG protocol on PRI, 95 / STD / ISD / Local- Locking ,Class of Service, Quick Dial- Single Digit dialing of any two external numbers, Once only ring device, Boss/Secretary- Do not Disturb Facility, Power Down Mode, Hot Line, Hot Outward Dialing, Day Night Mode, Auto Call Back, Barge-in, Call Pick Up & Call Transfer, Call transfer while Ringing. With Voice Guide System, (DISA), Caller ID (CLI), CLI Base ECF, CLI Base routing Internet Ready Port, External Music Port, Call Budgeting, Call cost Calculation(ASMDR), DID Direct Inverse Dialing, External Music Input, Global Directory Printing. with following capacities. - 01 PRI Card - 04 Trunks/Co Lines - 4 Digital Port - 480 Analog extensions. -50 SIP Licences for IP Phones.	Lot	1	2468188.00	2468188.00
17.2	Supply installation testing and commissioning of Basic caller ID analogue phone sll be with minimum 16 digit LCD panel , minimum 10 nos incoming memory call/5 nos outgoing memory call with features like redial etc.	Nos.	278	1925.00	535150.00
17.3	Supply installation testing and commissioning of IP Phones	Nos.	7	11057.00	77399.00
17.4	Supply, Installation, testing and commissioning of 48 Port Gigabit POE Switch 375 Watts Each Port Supports 30 Watts (802.3at) with 4 Gigabyte SFP Port ,24 Port Full Gigabit Power Over Ethernet with switching capacity 56 Gbps Auto Mac Address Learning and Aging 4 Port Uplink, LED Indigators for Monitoring power, link, activity and speed.	Nos.	1	108600.00	108600.00
17.5	Supply, Installation, testing and commissioning of 48 port Unshielded Cat 6A 19" UTP Copper Jack Patch Panel (loaded) on 1U and supports universal wiring T568 A or B wiring pattern including grounding bolt, cage nuts and rear cable manager. Each port of the panel is numbered and as a designate label area for clear port identification complete as required.	Nos.	1	29125.00	29125.00
17.6	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.				
17.6.1	2 Pair	Meter	15304	33.00	505032.00
17.7	Supply, Installation, testing and commissioning of 60 pair KRONE Module with MDF box.	Nos.	6	5430.00	32580.00
17.8	Supply, Installation, testing and commissioning of 100 pair KRONE Module with MDF box	Nos.	4	10860.00	43440.00
17.9	Supplying and fixing of following sizes 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.				
17.9.1	25 mm	Meter	3061	127.00	388747.00
18	ACCESS CONTROL SYSTEM				
18.1	Supply, Installation, testing and commissioning of Networkable multiprocessor controlled Intelligent Independent 4 reader 4 door controller with 120000 cardholders and upto 25,000 events in memory with power supply alongwith TCP/IP connectivity, 8 inputs 4 outputs and 2 dedicated inputs for Power Supply failure and temper, CE/UL and RoHS complied complete as per detailed specifications and as required.	Nos.	7	96259.00	673813.00
18.2	Supply, Installation, testing and commissioning of Surface mounted 2-3" Mifare Smart card readers suitable for indoor complete as per specifications.	Nos.	26	9626.00	250276.00
18.3	Supply, Installation, testing and commissioning of Recessed/Surface mounted Electromagnetic Locks suitable for glass/ wood doors capable of withstanding a minimum force of 600 lbs including the cost of mounting brackets/hardware for door mounting complete as per specifications For Single Leaf Door.	Nos.	1	3209.00	3209.00
18.4	Supply, Installation, testing and commissioning of Recessed/Surface mounted Electromagnetic Locks suitable for glass/ wood doors capable of withstanding a minimum force of 600 lbs including the cost of mounting brackets/hardware for door mounting complete as per specifications for Double Leaf Door.	Nos.	25	5134.00	128350.00
18.5	Supply, Installation, testing and commissioning of Recessed/Surface mounted Emergency Glass Break Door Release Switch Unit for Manual Override of reader controlled fire exit doors complete as per specifications and as per models specified	Nos.	110	963.00	105930.00
18.6	Supply, Installation, testing and commissioning of Recessed/ surface mounted Magnetic Contact Door Sensor for monitoring the status of the doors (OPEN/CLOSE) complete as per specifications and as per models specified.	Nos.	26	321.00	8346.00
18.7	Supply, Installation, testing and commissioning of Blank faced NXP Mifare Classic EV1 1Kb smart card	Nos.	500	161.00	80500.00
18.8	Supply, installation and commissioning of Access Management Software along with Alarm Management module for 2000 cardholders 200 readers, 1 Client workstation License along with API for 3rd party integration complete as per specifications and as required.	License	1	320864.00	320864.00
18.8.1	-User location tracking				
18.8.2	-Operator and User definition				
18.8.3	-Card designing and printing facility				
18.8.4	-Time & attendance basic recording				
18.8.5	-Intrusion detection and alarm monitoring				
18.8.6	-Pre-defined automatic actions				
18.8.7	-Live graphics				
18.8.8	-Event history				
18.8.9	-Database - SQL				
18.9	Supply, installation and commissioning Application/Database server with Intel Latest generation Xeon processor, with min 8 cores, 32 GB RAM, 1TB SSD HDD, Graphics device and 32" monitor capable of Full HD (1920 x 1080) or higher, Ethernet adapter, Keyboard & mouse with latest SQL standard license, latest windows server license and MS Office license complete as per specifications and as required.	Nos.	1	320864.00	320864.00
18.10	Supplying and drawing of Shielded, Multistanded Copper Conductor, PVC sheathed Cable in Conduit with Saddle Supports every 0.3 meters, fittings and accessories.				
18.10.1	8 c x 1 Sq.mm (for Readers)	Meter	1407	97.00	136479.00
18.10.2	2c x 1 Sq.mm (for REX , BGU, EML)	Meter	1460	64.00	93440.00
18.11	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.				
18.11.1	1 run of cable	Meter	263	49.00	12887.00
18.12	Supplying and fixing of following sizes 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.				
18.12.1	25 mm	Meter	626	127.00	79502.00

S. No	DESCRIPTION	UNIT	QTY	RATE without GST	AMOUNT
19	Supply, installation, testing & commissioning of lift of following capacities and type suitable for operation on 415 V, 3 phase, 50 Hz AC supply, having AC variable voltage and variable frequency typel, without machine room, speed of 1.0 Mtr/sec, electromagnetic brake system, simple operations, operating control panel with luminous buttons, overload warning indicator, battery operated alarm bell, LED type emergency light, intercom suitable for hook up to EPABX, infrared ray sensing door protection for full height, reverse phase relay on controller, fireman's switch at ground floor, ARD system, operation and maintanance contract as per tender conditions. Digital car positions indicator in car and at all positions indicator in car and at all floors with Up/DOWN direction, all signal fixtures in stainless stell faceplates, light fixtures, ventilation fan, etc complete with all accessories including automatic rescue device in the event of power failure etc., Complete with necessary scaffolding, electrical panel, logic control panel and shaft lighting etc required for the erection of the elevators as required. Machine Room less (MRL) Type with the traction motor placed in machine room at top (suitable for lift well size complete as per cpwd specification, simplex full collective operation with/without attendant. Car/Hoistway Entrance, protected by stainless steel hairline doors and clear center /side opening min as per site. 15 Pasanger Lift , suitable car size Inside dimensions and entrance at front side on all the serving floors, provided with matt finish stainless steel panel on all four side and ceiling, stretcher protection on three sides complete as per requirement.				
19.1	6stops & 6openings ,Total travel height is approximately 22--25M, Speed 1.0MP/S	set	2.00	2381075.00	4762150.00
20	Supply, installation, testing & commissioning of lift of following capacities and type suitable for operation on 415 V, 3 phase, 50 Hz AC supply, having AC variable voltage and variable frequency typel, without machine room, speed of 0.50 Mtr/sec, electromagnetic brake system, simple operations, operating control panel with luminous buttons, overload warning indicator, battery operated alarm bell, LED type emergency light, intercom suitable for hook up to EPABX, infrared ray sensing door protection for full height, reverse phase relay on controller, fireman's switch at ground floor, ARD system, operation and maintanance contract as per tender conditions. Digital car positions indicator in car and at all positions indicator in car and at all floors with Up/DOWN direction, all signal fixtures in stainless stell faceplates, light fixtures, ventilation fan, etc complete with all accessories including automatic rescue device in the event of power failure etc., Complete with necessary scaffolding, electrical panel, logic control panel and shaft lighting etc required for the erection of the elevators as required. Machine Room less (MRL) Type with the traction motor placed in machine room at top (suitable for lift well size complete as per cpwd specification, simplex full collective operation with/without attendant. Car/Hoistway Entrance, protected by stainless steel hairline doors and clear center /side opening min as per site. 2000 KG Goods Lift , suitable car size Inside dimensions and entrance at front side on all the serving floors, provided with matt finish stainless steel panel on all four side and ceiling, stretcher protection on three sides complete as per requirement. (Lift shall be openable at on two sides at Ground floor)				
20.1	7 stops & 7openings ,Total travel height is approximately 25--28M, Speed 0.50MP/S	set	1.00	3542575.00	3542575.00
	Total Amount Without GST				122366463