

BILL OF QUANTITIES					
N/W	Construction of Type-II Apartments (G+10, 80 Nos) including Water supply, Sanitary installation, Internal Electrical installations, Fire Fighting, Fire Alarm system, Lifts and development works at IIT Kanpur.(SH: Electrical works)				
S.No	DESCRIPTION	UNIT	QTY	RATE without GST	AMOUNT
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	Group A	Point	3268.00	890.00	2908520.00
2	Wiring for group controled (looped) 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.				
2.1	Group A	Point	540.00	569.00	307260.00
3	Wiring for twin control light point with 1.5 Sq.Mm FRLS PVC insulated copper conductor single core cable in surface/recessed medium class PVC conduit, 2 way 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.	Point	50.00	1370.00	68500.00
4	Wiring for light /power plug with 2 x 4 Sq.Mm. FRLS PVC insulated, copper conductor single core cable in surface / recessed medium class PVC conduit along with 1 no. 4 Sq.Mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	mtrs	10260.00	293.00	3006180.00
5	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.				
5.1	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire.	mtrs	420.00	204.00	85680.00
5.2	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire.	mtrs	14892.50	241.00	3589092.50
5.3	2 x 6 sq.mm. + 1 x 6 sq.mm. Earth wire	mtrs	6400.00	385.00	2464000.00
5.4	2 x 10 sq.mm. + 1 x 6 sq.mm. Earth wire	mtrs	100.00	500.00	50000.00
5.5	2 x 16 sq.mm. + 1 x 6 sq.mm. Earth wire	mtrs	2000.00	677.00	1354000.00
5.6	4 x 10 sq.mm. + 2 x 6 sq.mm. Earth wire	mtrs	50.00	881.00	44050.00
5.7	4 x 16 sq.mm. + 2 x 6 sq.mm. Earth wire	mtrs	50.00	1197.00	59850.00
6	Supply 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.				
6.1	20 mm	mtrs	7290.00	112.00	816480.00
6.2	25 mm	mtrs	2430.00	127.00	308610.00
6.3	32 mm	mtrs	486.00	161.00	78246.00
7	Supply and fixing of suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 amps modular socket outlet and 5/6 amps. modular switch, connection etc. as required.	Nos	743.00	418.00	310574.00

8	Supply and fixing of suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 amps modular socket outlet and 15/16 amps. modular switch, connections etc. as required.	Nos	513.00	514.00	263682.00
9	Supply and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	Nos	1.00	324.00	324.00
10	Supply and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.	Nos	440.00	35.00	15400.00
11	Supplying and fixing 20 A, 240 volts , SPN industrial type socket outlet, with 2 pole and earth, metal enclosed plug top alongwith 20 amps "C" curve, SP, MCB, in sheet steel enclosure, on surface or in recess, with chained metal cover for the socket out let and complete with connections, testing and commissioning etc. as required.	Nos	1.00	1421.00	1421.00
12	Supplying and fixing 5 amps. to 32 amps. rating, 240/415 V, 10kA, "C" curve, miniature circuit breaker (MCB) suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
12.1	single pole	Nos	1328.00	224.00	297472.00
13	Supplying & fixing single pole, blanking plate in the existing MCB DB complete etc. as required.	Nos	88.00	11.00	968.00
14	Supplying and fixing following way, horizontal type TP&N MCB distribution board of steel sheet for 415 volts, 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 / Isolators).				
14.1	8 way (4 + 24), Double door	Nos	1.00	5232.00	5232.00
15	Supplying and fixing following way Single pole and neutral, sheet steel, MCB distribution board , 240 volts 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)				
15.1	12 way, Double door	Nos	2.00	2030.00	4060.00
15.2	16 way double door	Nos	80.00	2754.00	220320.00
16	Supplying and fixing following rating, double pole, (single phase and neutral), 240 volts, residual current circuit breaker (RCCB), having a sensitivity current upto 30 milliamperes in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
16.1	40 amps	Nos	2.00	2317.00	4634.00
16.2	63 amps	Nos	80.00	2387.00	190960.00
17	Supplying and fixing following rating, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current upto 30 milliamperes in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
17.1	40 amps	Nos	1.00	2795.00	2795.00
17.2	63 amps	Nos	1.00	2518.00	2518.00

18	Supplying and fixing 30 A, 415 volts , TPN industrial type socket outlet, with 4 pole and earth, metal enclosed plug top alongwith 30 amps "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.	Nos	1.00	3601.00	3601.00
19	Supply and fixing of 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 amps modular socket outlet and 2 nos 5/6 amps. modular switch, connection etc. as required.	Nos	488.00	593.00	289384.00
20	Supply and fixing of suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 25 amps modular socket outlet and 25 amps. modular SP MCB 'C' Curve including, connection, painting etc. as required.	Nos	320.00	637.00	203840.00
21	Providing and fixing 25mm x 5 mm G.I strip on surface or in recess for connections etc. as required. Make-LPI / Erico / PHOENIX	mtrs	1900.00	214.00	406600.00
22	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing as required. Make-LPI / Erico / PHOENIX	mtrs	2500.00	61.00	152500.00
23	LIGHTNING AIR TERMINAL Supply, installation, testing & commissioning of conventional lightning protection system comprising of air terminal of 1 mtr long 16 mm dia manufactured from highly conductive Copper rod with the sharp tip at the top and UNC threads at the bottom to fit into the base unit. Model: APSAT116C + APSTB16-253 or EQ.	Nos	14.00	15273.00	213822.00
24	ALUMINIUM ROUND CONDUCTOR Supply, installation, testing & commissioning of 08 mm round roof conductor as per IEC 62305- 3 for protection from direct lightning current. The conductor is to be install with conductor holder at every 1.5 mtr. Distance Tested for Electrical, Mechanical and Chemical as per IEC 62561. Model-AL08 or EQ.	mtrs	1130.00	262.00	296060.00
25	ROUND CONDUCTOR HOLDER Supply, installation, testing & commissioning of roof conductor holder of DMC materiel with minimum height of 50 mm for 08 mm Al. The distance between each conductor holder will be of 1.5 mtr. Tested for Electrical, Mechanical and Chemical as per IEC 62561.Model-APSRCS50 or EQ.	Nos	754.00	196.00	147784.00
26	DOWN CONDUCTOR Supply, installation, testing & commissioning of 08 mm round down conductor as per IEC 62305- 3 for protection from direct lightning current. The conductor is to be install with conductor holder at every 1.5 mtr. Distance.Tested for Electrical, Mechanical and Chemical as per IEC 62561 Model-AL08 or EQ.	mtrs	910.00	262.00	238420.00

27	<u>DOWN CONDUCTOR HOLDER</u> Supply, of down conductor holder of DMC materiel with minimum height of 50 mm for 08 mm Al. The distance between each conductor holder will be of 1.5 mtr. Tested for Electrical, Mechanical and Chemical as per IEC 62561. Model-APSRCS50 or EQ.	Nos	607.00	225.00	136575.00
28	<u>EXPANSION PIECE</u> Supply, installation, testing & commissioning of expansion piece of 08 mm Aluminium as per IEC 62305-3. The fixing of expansion piece with connector each after 20 mtr. Tested for Electrical, Mechanical and Chemical as per IEC 62561. Model-APSRCS50 or EQ.	Nos	8.00	174.00	1392.00
29	<u>EXPANSION PIECE CONNECTOR</u> Supply, installation, testing & commissioning of expansion piece Connector of 08 mm Aluminium as per IEC 62305-3 . The fixing of expansion piece with connector each after 20 mtr. Tested for Electrical, Mechanical and Chemical as per IEC 62561. Model-APSEXP50 or EQ.	Nos	16.00	2254.00	36064.00
30	<u>CROSS CONNECTOR</u> Supply, installation, testing & commissioning of Cross connector clamps for fixing of 8mmAl. Round conductor. The distance between each holder will be of 1 mtr. Tested for Electrical, Mechanical and Chemical as per IEC 62561. Model-APSCCRC50 or EQ.	Nos	4.00	2691.00	10764.00
31	<u>T CONNECTOR</u> Supply, installation, testing & commissioning of T connector clamps for fixing of 8mm Al. Round conductor. The distance between each holder will be of 1 mtr. Tested for Electrical, Mechanical and Chemical as per IEC 62561. Model-APSTCR50 or EQ.	Nos	20.00	2691.00	53820.00
32	<u>TEST LINK BOX</u> Supply, installation, testing & commissioning of weather proof thermoplastic insulated, shock proof, dust & rust proof enclosure of suitable dimension. Model-APSTLBCU or EQ.	Nos	12.00	6545.00	78540.00
33	<u>LIGHTNING STRIKE RECORDER</u> Supply, installation, testing & commissioning of Lightning Strike Recorder - 7 digits electro mechanical display to record the lightning current in an IP 67 enclosure with the minimum sensitivity of 1500A & maximum capacity of 220 KA (8/20 micro second waveform). The recorder is of non-resettable type with the electro-mechanical display. <ul style="list-style-type: none"> • LCD screen is not permitted as it may depend upon the battery life to energize the LCD. • Tested & certified inline with the ese lightning arrester in an international laboratory for an impulse current of more than 450 KA as per IEC 60-1:1989 standard. • Tested & certified by CPRI (Central Power Research Institute), Govt of India for the Impulse current of 45 KA with 5 positive & 5 negative impulse. Model-LSR01 or EQ.	Nos	4.00	65456.00	261824.00

34	<p><u>CHEMICAL GEL EARTHING SYSTEM</u></p> <p>Supply, installation, testing & commissioning of advance chemical gel earthing system of 01 number of UL listed copper bonded earth electrode along with 50 Kgs of JK Reslow grounding minerals.</p> <p>Earthing Electrode</p> <ul style="list-style-type: none"> • Technology - Copper Bonded Steel Rod • Length of the electrode = 3000 mm / 3 mtrs • Rod dia = 17.2 mm • Copper bonding thickness = 250 microns • Certification - UL • ISO 9001:2015 certified manufacturer • ISO 14001:2015 certified manufacturer • UL (USA) listed manufacturer <p>Back Fill Compound</p> <ul style="list-style-type: none"> • Compound = JK RESLOW grounding minerals (25 Kgs bag) • Certification - Test certificate from BIS (Bureau of Indian Standards), Govt of India accredited laboratory confirming the contents • IEEE80-2000 standard - Test certificate from NABL, BIS, DGS&D, MOEF, DGQA accredited laboratory confirming the ohmic value of less than 0.12 ohm-mtr as per clause 14.5 d • Moisture retaining capacity (pH Value) - Between 7 to 7.2. <p>Model-JK317CBR or EQ.</p>	Nos	28.00	43637.00	1221836.00
35	<p><u>HEAVY DUTY POLYPLASTIC EARTH PIT CHAMBER COVER</u></p> <p>Supply, installation, testing & commissioning of heavy duty weather proof environment friendly polyplastic earth pit chamber with cover of auto-locking facility with 4 knock-out openings are provided for the easy strips between the earth pits to form a grid.</p> <ul style="list-style-type: none"> • Top (Dia)- 254 mm • Bottom (Dia)- 330 mm • Height - 260 mm <p>Certification: Load bearing capacity of 9 tons from National Test House laboratory (Govt of India)</p> <p>Model-PPC01 or EQ.</p>	Nos	28.00	3636.00	101808.00
36	<p>Supply, installation, testing & commissioning of 20W LED Batten surface mounting luminare with high efficiency PMMA diffuser including all necessary accessories complete. (Philips BN150W LED20S-6500 PSE OD GR OR EQ).</p>	Nos	241.00	833.00	200753.00
37	<p>Supply, installation, testing & commissioning of 5-8W LED 6500K (300-400MM.) Wall/Surface mounted Ligh as per Philips Shellline OR EQ.</p>	Nos	160.00	570.00	91200.00
38	<p>Supply, installation, testing & commissioning of 12W LED Bulb wall Bracket light fixture including all necessary accessories complete. with glass to give glare free light as per Decon wall bracket CAT NO L05AAM - 12 / Philips or EQ.</p>	Nos	400.00	1797.00	718800.00
39	<p>Supply and installation of surface mounted Round 12 W LED down lighter in powder coated white finish with integrated electronic driver, including all required mounting accessories complete. Philips/ Decon L03AAI-12 or EQ).</p>	Nos	1933.00	2008.00	3881464.00

40	Supply and installation of surface mounted Squire 12 W LED down lighter in powder coated white finish with integrated electronic driver, including all required mounting accessories complete. Philips DN097B LED10S-6500 PSU WH/ Decon L03AAJ - 12 or EQ).	Nos	400.00	2008.00	803200.00
41	Supply, installation, testing & commissioning of 9W LED IP54 bulkhead luminaire with opal diffuser Wall/Surface mounted Light including all necessary accessories complete.as per Philips WT 202W LED6S CW PSU S2 PC..	Nos	45.00	1975.00	88875.00
42	Supply, installation, testing and commissioning of Aviation obstruction light with LED lamp, toughened clear glass, with all accessories as per standard item with all accessories. . (Philips / Bajaj BGAV 302 LED OR EQ)	Nos	2.00	4384.00	8768.00
43	Supply of AC 230/250 volts, 50 HZ exhaust fan including providing nuts, bolts, mounting frame and other accessories etc. complete				
43.1	250 mm sweep 1250 rpm	Nos	160.00	2324.00	371840.00
44	S/F of hexagonal fan box with hexagonal side of approx. 80 mm.in length fabricated from 14 SWG M.S. sheet incorporating with 10 mm. dia. M.S. round bar duly bent for supporting fan ha nger painted with red oxide and screwing arrangement with wiring conduit laid in the R.C.C. roof before concreting along with supply of all materials including fan hook, labour, T&P etc. for proper completion of work.	Nos	409.00	132.00	53988.00
45	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, 2 nos. canopies, shackle kit, safety rope, copper winding, Power Factor not less than 0.9, Service Value (CMM/W) minimum 6.00, Air delivery minimum 210 CMM, 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.	Nos	409.00	2394.00	979146.00
46	Installation of exhaust fan in the existing opening, including making good the damage, connection, testing, commissioning etc. as required				
46.1	Upto 450 mm sweep	Nos	160.00	4035.00	645600.00
47	Extra for fixing the louvers / shutters complete with frame for a exhaust fans of all sizes.	Nos	160.00	181.00	28960.00
48	Supplying and fixing of call bell/buzzer suitable for single phase, 230 volts, complete as required.	Nos	80.00	87.00	6960.00
49	Installation, testing and commissioning of pre-wired, fluorescent fittings / compact flourescent fitting / LED batten of all types, complete with all accessories and tube 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.	Nos	3100.00	181.00	561100.00

50	Installation, testing and commissioning of pre-wired, fluorescent fitting / compact fluorescent fitting/LED batten of all types, complete with all accessories and tube etc., including supplying and fixing ball and socket arrangement, 2 no. down rods of 20 mm dia X 1.6 mm thick steel conduit upto 30 cm length, painting and wiring the down rods and connection with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and earthing etc. as required.	Nos	81.00	413.00	33453.00
51	Supplying, installation, testing and commissioning of Passive Infrared (PIR) technology based occupancy sensor having high preformance, non regulating programmable type, suitable for connected load upto 10 Amp, for mounting height up to 2.8 mtr and for 5 m diameter coverage area along with necessary fixing arrangements i/c programming at site etc. complete as required.	Nos	1.00	4035.00	4035.00
52	Supplying, installation, testing & commissioning of Astronomical time switch of following configuration to be mounted in feeder pillars / Lighting DBs for automatic switching On & Off of street lights at sun set & sun rise or twilight (Auto ON, Auto Off, Auto modes) with manual override facility with 12/24 hour display format with suitable battery and indication for relay status i/c programming at site complete as required.				
52.1	3 output (1 output per phase) and suitable for three phase supply	Nos	1.00	9292.00	9292.00
53	Providing and fixing M.V. danger notice plate of 200mmx150mm made of mild steel, atleast 2mm thick and vitreous enamelled white on both sides and with inscription single red colour on front side as required.	Nos	11.00	236.00	2596.00
54	Supplying and making cable route marker with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) of size 60 cm X 60 cm at the bottom and 50 cm X 50 cm at the top with a thickness of 10cm including inscription duly engraved as required.	Nos	20.00	513.00	10260.00
55	Supply, Installation, Testing & Commissioning of Block panel , cubicle type, made out of min 2mm thick CRCA sheet (load bearing), totally enclosed, IP42, free standing, floor mounting, dust and vermin proof, powder coated, indoor, compartmentalised, suitable for operation on 3 phase and neutral, 415 V, 50Hz AC system with busbars extendable on both sides, including internal wiring with suitable size wires, rotary handle, spreaders, 3mm thick gland plate, hinged type door with neoprene / PU gasket etc. The panel shall include supply & installation of following switchgears, metering instruments and accessories as per specification.				
	Incomer				
	400A TPN 35kA MCCB with microprocessor release with adjustable OL, SC and EF protection				
	Busbar				
	600 A TPN busbars of high conductivity electrolytic quality Aluminium alloy and suitable size earthing conductor through out the panel for its earthing.				
	Instruments				

	2A, C curve SP MCB - 3 nos.				
	RYB indication lamp, LED type - 3 nos.				
	1 No 3 phase Digital Multi function meter to read V, A, F, kW, kWh, Acc class 1.				
	400/5A 5VA class 1 resin cast CT - 1 set				
	Outgoing.				
	250A TPN 35kA MCCB with microprocessor release with adjustable OL, SC and EF protection - 1 nos.				
	100A, TPN, 35kA MCCB, thermal magnetic having adjustable O/L, SC protection - 11 nos.				
	The switchboard shall be complete with all inter connections, risers, internal wiring, labels etc complete as required	Nos	1.00	394564.00	394564.00
56	Supply, Installation, Testing & Commissioning of Common Services panel , cubicle type, made out of min 2mm thick CRCA sheet (load bearing), totally enclosed, IP42, free standing, floor mounting, dust and vermin proof, powder coated, indoor, compartmentalised, suitable for operation on 3 phase and neutral, 415 V, 50Hz AC system with busbars extendable on both sides, including internal wiring with suitable size wires, rotary handle, spreaders, 3mm thick gland plate, hinged type door with neoprene / PU gasket etc. The panel shall include supply & installation of following switchgears, metering instruments and accessories as per specification.				
	Incomer				
	250A TPN 35kA MCCB with microprocessor release with adjustable OL, SC and EF protection-2 nos				
	Bus coupler				
	250A FP 35kA MCCB with microprocessor based release with adjustable OL, SC and EF protection - 1 nos				
	Suitable electrical interlocking shall be provided between the DG, EB incomers & Bus couplers to ensure that only one supply is available at a time on each section of bus and to eliminate any possibility of both supplies at one bus section.				
	Busbar				
	400 A TPN busbars of high conductivity electrolytic quality Aluminium alloy and suitable size earthing conductor through out the panel for its earthing.				
	Instruments (with each incomer)				
	2A, C curve SP MCB - 3 nos.				
	RYB indication lamp, LED type - 3 nos.				
	1 No 3 phase Digital Multi function meter to read V, A, F, kW, kWh, Acc class 1.				
	250/5A 5VA class 1 resin cast CT - 1 set				
	Outgoing.				
	200A TPN 35kA MCCB with microprocessor release with adjustable OL, SC and EF protection - 1 nos.				
	100A, TPN, 35kA MCCB, thermal magnetic having adjustable O/L, SC protection - 3 nos.				
	The switchboard shall be complete with all inter connections, risers, internal wiring, labels etc complete as required	Nos	1.00	254274.00	254274.00

57	Supply, Installation, Testing & Commissioning of METER panel , cubicle type, made out of min 2mm thick CRCA sheet (load bearing), totally enclosed, IP42, free standing, floor/ Wall mounting, dust and vermin proof, powder coated, indoor, compartmentalised, suitable for operation on 3 phase and neutral, 415 V, 50Hz AC system with busbars extendable on both sides, including internal wiring with suitable size wires, rotary handle, spreaders, 3mm thick gland plate, hinged type door with neoprene / PU gasket etc. The panel shall include supply & installation of following switchgears, metering instruments and accessories as per specification.				
	Incomer				
	100A, TPN, 25kA MCCB, thermal magnetic having adjustable O/L, SC protection				
	Busbar				
	160 A TPN busbars of high conductivity electrolytic quality Aluminium alloy and suitable size earthing conductor through out the panel for its earthing.				
	Instruments				
	2A, C curve SP MCB - 3 nos.				
	RYB indication lamp, LED type - 3 nos.				
	1 No 3 phase Digital Multi function meter to read V, A, F, kW, kWh, Acc class 1.				
	160/5A 5VA class 1 resin cast CT - 1 set				
	Outgoing.				
	63A, SPN, 10kA MCB - 9 nos.				
	1-Phase meter as per IIT Kanpur guidelines-8 nos				
	The switchboard shall be complete with all inter connections, risers, internal wiring, labels etc complete as required	Nos	10.00	65761.00	657610.00
58	Supply, Installation, Testing & Commissioning of LIFT panel , cubicle type, made out of min 2mm thick CRCA sheet (load bearing), totally enclosed, IP42, free standing, floor mounting, dust and vermin proof, powder coated, indoor, compartmentalised, suitable for operation on 3 phase and neutral, 415 V, 50Hz AC system with busbars extendable on both sides, including internal wiring with suitable size wires, rotary handle, spreaders, 3mm thick gland plate, hinged type door with neoprene / PU gasket etc. The panel shall include supply & installation of following switchgears, metering instruments and accessories as per specification.				
	Incomer				
	100A, TPN, 25kA MCCB, thermal magnetic having adjustable O/L, SC protection				
	Busbar				
	160 A TPN busbars of high conductivity electrolytic quality Aluminium alloy and suitable size earthing conductor through out the panel for its earthing.				
	Instruments				
	2A, C curve SP MCB - 3 nos.				
	RYB indication lamp, LED type - 3 nos.				
	1 No 3 phase Digital Multi function meter to read V, A, F, kW, kWh, Acc class 1.				

	160/5A 5VA class 1 resin cast CT - 1 set				
	Outgoing.				
	63A TPN, 10 KA MCB- 4 nos				
	40A SPN, 10 KA MCB- 2 nos				
	The switchboard shall be complete with all inter connections, risers, internal wiring, labels etc complete as required	Nos	1.00	30688.00	30688.00
59	Supply, Installation, Testing & Commissioning of Street lighting panel , cubicle type, made out of 2mm thick CRCA sheet, totally enclosed, free standing, floor mounting, dust and vermin proof, powder coated, outdoor type, compartmentalised, suitable for operation on 3 phase and neutral, 415 V, 50Hz AC system, including internal wiring with suitable size wires, rotary handle, spreaders, 3mm thick gland plate, hinged type door with neoprene gasket etc. The panel shall include supply & installation of following switchgears, metering instruments and accessories as per specification.				
	Incomer				
	63A, TPN, switch disconnector unit (Isolator), AC23, 415V, 50Hz, complete with handle assembly having door interlock -				
	Busbar				
	1 Set of 100 A TPN busbars of high conductivity electrolytic quality Aluminium alloy.				
	Instruments				
	2A, C curve SP MCB - 3 nos.				
	RYB indication lamp, LED type - 3 nos.				
	1 No 3 phase Digital Multi function meter to read V, A, F Acc class 1.				
	63/5A 5VA class 1 resin cast CT - 1 set				
	Outgoing.				
	16A TP+NL C curve MCB - 5 nos.				
	40A AC1 duty 4P Power contactor - 4 nos.				
	16A SPN MCB-2 nos				
	Necessary space provision and control wiring for satisfactory operation of Astronomical time switch for automatic switching ON & OFF of street lights.	Nos	1.00	70145.00	70145.00
60	Supply & Laying of ISI marked aluminium conductor FR XLPE insulated cable as per IS 7098, & cable, armoured, served, sheathed 1100 volts grade.				
60.1	10 sqmm 2 core	mtrs	200.00	139.00	27800.00
60.2	16 sqmm 2 core	mtrs	100.00	161.00	16100.00
60.3	10 sqmm 4 core	mtrs	450.00	177.00	79650.00
60.4	16 sqmm 4 core	mtrs	150.00	198.00	29700.00
60.5	35 sqmm 3 1/2 core	mtrs	500.00	291.00	145500.00
60.6	50 sqmm 3 1/2 core	mtrs	200.00	370.00	74000.00
60.7	95 sqmm 3 1/2 core	mtrs	50.00	609.00	30450.00
61	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.				
61.1	2 X 10 sq. mm (19mm)	Nos	70.00	211.00	14770.00
61.2	2 X 16 sq. mm (22mm)	Nos	2.00	224.00	448.00
61.3	4 X 10 sq. mm (25mm)	Nos	10.00	236.00	2360.00
61.4	4 X 16 sq. mm (28mm)	Nos	4.00	271.00	1084.00
61.5	3.5 x 35 Sq mm (32 mm)	Nos	20.00	324.00	6480.00
61.6	3.5 x 50 Sq mm (35 mm)	Nos	4.00	362.00	1448.00

61.7	3.5 x 95 Sq mm (45 mm)	Nos	4.00	516.00	2064.00
62	Supplying and installing following size of perforated pre-painted M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended FRLS from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. (Perforated cable tray shall be used, where wire mesh and ladder type cable tray difficult to used as required)				
62.1	100 mm width X 50 mm depth X 1.6 mm thickness	mtrs	70.00	476.00	33320.00
62.2	150 mm width X 50 mm depth X 1.6 mm thickness	mtrs	46.21	530.00	24490.56
62.3	225 mm width X 50 mm depth X 1.6 mm thickness	mtrs	50.00	604.00	30200.00
62.4	300 mm width X 50 mm depth X 1.6 mm thickness	mtrs	70.00	681.00	47670.00
62.5	450 mm width X 50 mm depth X 2 mm thickness	mtrs	40.00	997.00	39880.00
62.6	600 mm width X 50 mm depth X 2 mm thickness	mtrs	10.00	1198.00	11980.00
63	Supply, installation, testing and commissioning of decorative post top light 30 W, Painted high pressure die cast aluminium base & Base plate, Acrylonitrile styrene cover, High impact Acrylic protector (IK 08) IP 66 Symmetric indirect light distribution, Suitable for post top mounting (60mm Dia).	Nos	9.00	25866.00	232794.00
64	Supply, installation, testing and commissioning of Street light luminaire, an IP66 LED Safe optic compartment, a separate IP 66 control gear compartment with an impact resistance of IK08, an extruded aluminium painted housing, a toughened glass protector, permanently sealed with a robotically dispensed silicone sealant, closed at one end by an end cover and the other end by a frame and door assembly (to access control gear) both made of injection moulded polycarbonate, a removable control gear plate, safety plug and socket system, a high pressure die cast aluminium painted mounting spigot suitable for horizontal mounting (Ø 32 – 42mm) with tilt flexibility of (+)/(-) 10 degrees, with LensoFlex2 technology, PMMA lenses with wide photometry for increased pole spacing, luminous efficacy > 95 lm/W at Ta 25°C, lifetime residual flux @ Tq 35°C @ 50,000 hours = 70%, Ta = 50°C, internal surge protection of 4kV, Power Factor > 0.95, Colour Rendering Index > 70 and cool white light 5700K.	Nos	17.00	10960.00	186320.00
65	Supply, installation, testing and commissioning of Decorative 6m high tubular pole in GI having two sections, bottom-1000mm having 114mm dia and top 5000mm having a dia of 76mm, duly primed and PU painted with base plate, with FP Connector, MCB etc but without nut and bolts.	Nos	17.00	22359.00	380103.00
66	Supply, installation, testing and commissioning of Single side bracket 500mm in length made of GI, duly primed and painted.	Nos	17.00	6363.00	108171.00

67	Supply, installation, testing and commisning of 3m high ECO Pole, tubular decorative pole above the ground level made of hot dipped galvanized iron (GI), primered and painted in PU base MRF paint factory finished, made of two sections bottom section of 1000mm having a diameter of 114mm and top section of 3000mm having a diameter of 76mm. The column shall also be provided with flush door at the bottom with proper strengthening to the cutout of the door opening. A junction/ looping box with Heavy duty connector shall be built into the pole with base plate of 250x250x15mm connector, MCB, cable upto light and all accessories but without foundation nut and bolts.	Nos	3.00	15344.00	46032.00
68	Supplying and fixing of <u>25 mm Medium class PVC conduit</u> along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.	mtrs	4840.00	127.00	614680.00
69	Supplying and fixing of <u>32 mm Medium class PVC conduit</u> along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.	mtrs	1210.00	161.00	194810.00
70	Supplying and fixing of <u>GI box</u> of following size modules, alongwith modular base & cover plate for modular switches in recess etc as required.				
70.1	1 or 2 Module (75mmX75mm)	Nos	242.00	261.00	63162.00
71	Supply and drawing of UTP <u>4 pair Cat 6 LAN cable</u> in the existing surface/recessed steel/PVC conduit as required.				
71.1	one run	mtrs	6050.00	50.00	302500.00
72	Supplying and fixing following <u>modular switch/ socket</u> on the existing modular plate & switch box including connections but excluding modular plate etc as required.				
72.1	RJ 45 socket	Nos	242.00	839.00	203038.00
73	Supplying and drawing <u>2 pair, 0.5 sq mm</u> FRLS PVC insulated copper conductor, un armoured <u>telephone cable</u> in the existing surface/recessed steel/ PVC conduit.	mtrs	6050.00	33.00	199650.00
74	Supplying and fixing of <u>25 mm Medium class PVC conduit</u> along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.	mtrs	4840.00	127.00	614680.00
75	Supplying and fixing of <u>32 mm Medium class PVC conduit</u> along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.	mtrs	1210.00	161.00	194810.00
76	Supplying and fixing following <u>modular switch/ socket</u> on the existing modular plate & switch box including connections but excluding modular plate etc as required.				
76.1	Telephone socket Outlet	Nos	242.00	130.00	31460.00
77	Supplying and fixing of <u>GI box</u> of following size modules, alongwith modular base & cover plate for modular switches in recess etc as required.				
77.1	1 or 2 module(75 mmx75 mm)	Nos	242.00	261.00	63162.00
78	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	mtrs	6050.00	41.00	248050.00

79	Supplying and fixing of 25 mm 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.	mtrs	4840.00	127.00	614680.00
80	Supplying and fixing of <u>32 mm Medium class PVC conduit</u> along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.	mtrs	1210.00	161.00	194810.00
81	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc as required.				
81.1	TV antenna socket outlet	Nos	242.00	130.00	31460.00
82	Supplying and fixing following size/ modules,GI box along with modular base, cover plate for modular switches in recess etc as required.				
82.1	1 or 2 module(75 mmx75 mm)	Nos	242.00	261.00	63162.00
83	Supplying, installation, testing & commissioning of manual call boxes of MS construction in surface/recess with stainless steel chain & hammer assembly complete with glass and push button etc. as required.	Nos	24.00	416.00	9984.00
84	Supplying, installation, testing & commissioning fire alarm sounder with facility to make announcement, mounted in M.S. box (16 SWG) with hinged cover plate & suitable for operation with amplifier i/c line matching transformer etc. complete as required.	Nos	24.00	488.00	11712.00
85	Supplying, installation, testing & commissioning talk back slave station in surface/recess suitable for operation on simplex mode complete with P.T.T. knob & speaker/microphone enclosed in a M.S.(16 SWG)/ ABS box with break glass in front etc. complete as required.	Nos	24.00	794.00	19056.00
86	Supplying, installation, testing & commissioning sector panel suitable for following zones, complete with visual indications for short circuit fault, open circuit fault, fire condition and all other standard facilities as per IS:2189 with mimic diagram for all area/zone covered, complete with all connections,interconnections as required.				
86.1	4 Zone	Nos	1.00	7774.00	7774.00

87	Supplying, installation, testing & commissioning of main control and indicating panel made out of 16 SWG MS sheet to accommodate the following items duly powder coated in approved colour with louvers for ventilation, locking arrangement, audio and visual indication for fire alarm and public address system, monitoring system including connections, interconnections etc complete as required. 6 Zone panel for fire alarm system 100 Watt amplifier racks suitable for operation on 230V AC/24V DC supply conforming to IEC-268-3 complete with all accessories as required - 2 Nos.(one to act as standby) Talk back master station with LED PTT (press to talk) push button for operation on 230V AC/24 V DC supply conforming to IEC-268 for simplex mode of operation/communication suitable for 20 Nos.talk back unit - 1 set.Announcement control desk suitable for selection of different zones selectively and ON ALL CALL switch with visual indication etc. complete as required -1 set. Monitor panel for loudspeaker complete with output snt temperature from 0 to 50 degreeC. 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 IP65 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	Nos	1.00	42716.00	42716.00
88	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.	mtrs	1850.00	315.00	582750.00

89	Supply, Installation, Testing and Commissioning of on grid 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 330Wp or above, manufactured in India, conforming to IS14286/ IEC61215, IS/IEC61730-Part-1, IS/ IEC61730-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 350-800V DC Input voltage range and 400V AC, three phase, 4 wire, 50Hz +/- 2.5Hz, 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 IP65 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 1.1kV 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	50.00	53538.00	2676900.00
90	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 type, without machine room, speed of 1.50 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 maintenance 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 steel 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. 13 Passenger 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.				
90.1	11 stops & 11 openings, Total travel height is approximately 34-38M, Speed 1.50MPS	set	2.00	2845232.00	5690464.00

91	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 type, without machine room, speed of 1.50 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 maintenance 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 steel 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.				
91.1	11 stops & 11 openings ,Total travel height is approximately 34--38M, Speed 1.50MPS	set	1.00	3392392.00	3392392.00
	TOTAL				47863710.06