

SUMMARY			
PROJECT :NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU			
LOCATION: BENGALURU			
DESCRIPTION : ELECTRICAL WORKS			
SL. NOS.	SUMMARY	SUPPLY	INSTALLATION
PART-A			
1	SECTION 1 : RCC & DWC PIPE	-	-
PART-B (INTERNAL ELECTRICAL WORKS BOQ)			
1	SECTION-1 : INTERNAL CABLES & CABLE TRAY	-	-
2	SECTION-2 : LT PANELS	-	-
3	SECTION-3 : DISTRIBUTION BOARDS	-	-
4	SECTION-4 : INTERNAL WIRING & POWER RECPTACLES	-	-
5	SECTION-5 : LIFT WIRING SYSTEM	-	-
6	SECTION-6 : EARTHING SYSTEM	-	-
8	SECTION-8 : MISCELLANEOUS	-	-
9	SECTION-8 : UPS SYSTEM	-	-
PART-C (ACCESS & CCTV BOQ)			
1	SECTION 1: ACCESS	-	-
2	SECTION 1: CCTV	-	-
	TOTAL	-	-
Exclusions :			
1. Active works of IT is not considered			
2. Rate Exculdes GST and other taxes			
3. Cost and Quantity to vary as per final layouts			
4. Kitchen internal Electrical details			
5. Solar BOQ			

BILL OF QUANTITIES

PROJECT :NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU

LOCATION: BENGALURU

DESCRIPTION : ELECTRICAL WORKS

SUBJECT : RCC & DWC PIPE WITH INSPECTION CHAMBERS

SI.No	DESCRIPTION	UNITS	QTY	RATE		AMOUNT	
				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
1	SECTION-a: DWC PIPE AND INSPECTION CHAMBERS :						
1.1	RCC & DWC Pipes						
	Excavation, refilling, consolidating, compacting of earth excluding in hard rock upto a depth as listed below. Consolidation shall be carried out in layer by sufficient watering and allowing sufficient time for Settlement.Double wall corrugated DWC Pipes with pressure withstand capacity of SN-4KN/m2 as per IS: 16205						
	DWC And RCC pipes						
a	220mm dia OD 200MM dia ID DWC pipe	Rmt.	60				
b	220mm dia OD 200MM dia ID RCC pipe	Rmt.	10				
c	160mm dia OD 150MM dia ID DWC pipe	Rmt.	RO				
d	110mm dia OD 100MM dia ID DWC pipe for ELV	Rmt.	10				
1.2	RCC CHAMBER CONSTRUCTION						
	Construction of brick masonry inspectioin chamber wit 75 class designation bricks in cement mortar1:4, RCC top slab with 1:2:4 mix, foundation concrete 1:4:8 mix, inside plastering 12mm thick with cement mortar and finished with floating coat of neat cement complete as per standard design (As per the detaclient shown in drawings) Medium duty FRP sunken type covers as per client approved of dimension with lifting hooks						
a	600mm (length) x 600mm(width) x 750mm(depth).(Internal dimension).	Nos.	5				
b	450mm (length) x 450mm(width) x 500mm(depth).(Internal dimension).	Nos.	RO				
1.3	Earth excavation upto a depth of 600/800mm & width upto 400mm for cable / pipe, refilling, consolidating, compacting, brick and sand protection for cables. Bricks and sand protections shall be as per the enclosed sketch	Cum	80				
	Total for Section-1					-	-

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				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
	SECTION-1 : INTERNAL CABLES & CABLE TRAY						
1	CABLES :						
	Supply,unloading,storing,shifting to required location, Installation, of 1.1 kV grade, 1C/3C/3.5C/4C, XLPE insulated, and PVC inner & outer sheath, stranded aluminium / Copper conductor, flat steel strip/ wire armoured cables conforming to IS:7098/ Part I (with latest amendments)and of following sizes.The cable shall bear ISI certification mark. Laying of the cable in existing hume pipe/cable tray including transportation of cable to site, and providing cable route/ joint markers and cable tie,including supply and fixing of cable tags for every 0.5 to 0.75 mtr,etc., complete as required. All cable shall be FR type. The rates shall include all leads,lifts & Staging/scffolding (if any). Imp Note: All HT & LT Cables shall be procured by contractor based on the shop drawings, site measurement and the client approved cable schedule.						
	END TERMINATIONS & GLAND EARTHING :						
	Supply, Installation, Testing & Commissioning of End terminations for cables with brass gland of Double / Single compression and copper lugs etc, complete as per specifications. Also Supply & Installation of Gland Earthing Consisting of Suitable ring and Brass Nuts, Bolts and washers. gland earthing with 14 SWG copper wire to connect to nearest earth flat. Cost of Aluminum engraving cable tag for incoming and out going cables shall be inclusive in rate.						
	NOTE :						
	Gland type : Heavy duty Brass with nickel plated						
	Compression : Double compression above 35 Sq.mm						
	Sealing Ring : Natural rubber for indoor, Neoprene for Outdoor						
	PVC gland should be provided for single core & multi core flexible copper cables						
	Only long body Aluminium lugs & copper lugs should be used for aluminum and copper armoured / unarmoured cables irrespective of sizes						
1.1	ARMoured ALUMINIUM CABLES						
1.1.1	Supply & Installation of 3.5C x 300 Sq mm XLPE Aluminium armoured cable						
	Supply & Installation	Mtrs	RO				
	End Termination						
	Supply & Installation	Nos.	RO				
1.1.2	Supply & Installation of 3.5C x 240 Sq mm XLPE Aluminium armoured cable						
	Supply & Installation	Mtrs	RO				
	End Termination						
	Supply & Installation	Nos.	RO				
1.1.3	Supply & Installation of 3.5C x 185 Sq mm XLPE Aluminium armoured cable						
	Supply & Installation	Mtrs	525				
	End Termination						
	Supply & Installation	Nos.	4				

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				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
1.1.4	Supply & Installation of 3.5C x 150 Sq mm XLPE Aluminium armoured cable	Mtrs	RO				
	End Termination	Nos.	RO				
1.1.5	Supply & Installation of 3.5C x 120 Sq mm XLPE Aluminium armoured cable	Mtrs	RO				
	End Termination	Nos.	RO				
1.1.6	Supply & Installation of 3.5C x 70 Sq mm XLPE Aluminium armoured cable	Mtrs	RO				
	End Termination	Nos.	RO				
1.1.7	Supply & Installation of 3.5C x 95 Sq mm XLPE Aluminium armoured cable	Mtrs	RO				
	End Termination	Nos.	RO				
1.1.8	Supply & Installation of 3.5C x 50 Sq mm XLPE Aluminium armoured cable	Mtrs	RO				
	End Termination	Nos.	RO				
1.1.9	Supply & Installation of 3.5C x 35 Sq mm XLPE Aluminium armoured cable	Mtrs	RO				
	End Termination	Nos.	RO				
1.1.10	Supply & Installation of 4C x 25 Sq mm XLPE Aluminium armoured cable	Mtrs	235				
	End Termination	Nos.	4				
1.1.11	Supply & Installation of 4C x 16 Sq mm XLPE Aluminium armoured cable	Mtrs	245				
	End Termination	Nos.	4				
1.1.12	Supply & Installation of 4C x 10 Sq mm XLPE Aluminium armoured cable	Mtrs	762				
	End Termination	Nos.	20				

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SL.NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT	
				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
1.1.13	Supply & Installation of 3C x 10 Sq mm XLPE Aluminium armoured cable	Supply & Installation	Mtrs	2075			
	End Termination	Supply & Installation	Nos.	60			
1.2	ARMoured copper cables						
1.2.1	Supply & Installation of 4C x 10 Sqmm XLPE, Cu, Ar. Cable	Supply & Installation	Mtrs	RO			
	End Termination	Supply & Installation	Nos.	RO			
1.2.2	Supply & Installation of 4C x 6 Sqmm XLPE, Cu, Ar. Cable	Supply & Installation	Mtrs	RO			
	End Termination	Supply & Installation	Nos.	RO			
1.2.3	Supply & Installation of 4C x 4 Sqmm XLPE, Cu, Ar. Cable	Supply & Installation	Mtrs	RO			
	End Termination	Supply & Installation	Nos.	RO			
1.2.4	Supply & Installation of 3C x 10 Sqmm XLPE, Cu, Ar. Cable	Supply & Installation	Mtrs	8			
	End Termination	Supply & Installation	Nos.	2			
1.2.5	Supply & Installation of 3C x 6 Sqmm XLPE, Cu, Ar. Cable	Supply & Installation	Mtrs	442			
	End Termination	Supply & Installation	Nos.	14			
1.2.6	Supply & Installation of 3C x 4 Sqmm XLPE, Cu, Ar. Cable	Supply & Installation	Mtrs	1278			
	End Termination	Supply & Installation	Nos.	36			
1.3	UNARMoured copper cables (Flexible cables)						
1.3.1	Supply & Installation of 1C x 6 Sq mm Copper Flexible cable	Supply & Installation	Mtrs	RO			
	End Termination	End Termination	Nos.	RO			
1.3.2	Supply & Installation of 1C x 10 Sq mm Copper Flexible cable						

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				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
	Supply & Installation	Mtrs	RO				
	End Termination						
	End Termination	Nos.	RO				
1.4	CABLE TRAY, RACEWAYS , TRUNKING & ACCESSORIES :						
	TYPICAL CABLE TRAY SUPPORT DETAIL (BOLTED TYPE CABLE TRAY) :						
	ceiling support detail : MS angle Supports (site fabricated as per the tray width) must be welded to a square true ceiling base plate with arc welding, the base plate must be fixed to the true ceiling with 04 nos. of anchor fasteners. Supports must be made out of MS L angle type shall be provided for cable tray width of 750mm and above. For 600mm and Less than 600mm width tray support with 10mm hi-tech threaded rods & anchor fasteners. MS angle shall be provided with 2 coats of primer & 2 coats of enamel paint (approved color), Proper dressing of the cable tray supports shall be done. The size of MS L angle for tray sizes shall be as follows: 1500mm wide cable tray: 75x75x6mm, 200x200x10mm Plate, M12 Anchor fastner 750mm to 1000mm wide cable tray : 50x50x6mm, 100x100x10mm Plate, M10 Anchor fastner. Withstanding weight: 750mm tray 250-300Kg/M & 1000-1500 tray 350-400Kg/M. 450mm to 600mm wide cable tray: 10mm hi tech rods & anchor fasteners. Withstanding weight: 450 - 600 tray 150-200Kg/M. Rates shall include the cost of all scaffolding/staging required for installation of cable tray. (Suppoorts and Accessroies Make : HILTI / MUPRO / PROFAB / OBO)						
	Cable tray support spacing for 750mm and below is 1.5M interval, for cable tray size 1000mm and above is 1M interval or as per architect. All fixing accessories & Support spacing need to cross check with respect to withstand required weight and as per the site condition.						
(A)	Supply, installation, testing & commissioning of 1.5mm thick for above MS powder coated Ladder type cable tray complete with all necessary coupler plates, elbows, tees, bends, reducers, stiffeners, grip/Anchor bolts or fasteners and other accessories and hardware need to be considered. The Quoted rate shall be inclusive of All hardware i.e. bolts, nuts, screws. washers, etc. Cable tray reduser, 90 deg bend shoud be factory fabricated. The thickness of galvanising shall be 87microns						
	Earthing strip of 1no of 25x6mm GI for entire length of the cable tray to be considered.						
	The quoted rate for the cable tray to be inclusive of suitable size GI threaded rod. For size up to 450mm shall be with threaded GI rod & above 450mm with higher dia threaded GI road to withstand weight of the tray and can have intermediate C channel supports.						
	Factory made customised bends suiting to design to be used .Cost to include same						

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SL.NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT	
				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
1.4.1	600 mm X 50 mm X 2mm Light duty Ladder type cable trays.	Mtrs.	RO				
1.4.2	300 mm X 50 mm X 2mm Light duty Ladder type cable trays.	Mtrs.	RO				
1.4.3	100 mm X 100 mm PVC Race Way with End Caps for Distribution Board Dressing.						
	Supply & Installation	Mtrs.	RO				
1.4.4	150 mm X 60 mm PVC Trunking system for CCTV						
	Supply & Installation	Mtrs.	15				
1.4.5	150mm wide x 100mm depth 18G DB cabinet M S Powder coated including supply & installation.						
	Supply & Installation	Mtrs.	35				
1.4.6	300mm wide x 100mm depth 18G DB cabinet M S Powder coated including supply & installation.						
	Supply & Installation	Mtrs.	RO				
(B)	Supply, installation, testing & commissioning of 1.6mm thick perforated type MS powder coated cable tray without cover & with all necessary coupler plates, elbows, tees, bends, reducers, stiffeners, grip/Anchor bolts or fasteners and other accessories and hardware need to be considered complete as per Technical specification & drawing details. The Quoted rate shall be inclusive of all hardware i.e. bolts, nuts, screws, washers, etc. Cable tray reducer, 90 deg bend should be factory fabricated. The thickness of galvanising shall be 87microns						
	The quoted rate for the cable tray to be inclusive of suitable size threaded rod. For size up to 450mm shall be with threaded GI rod & above 450mm with higher dia threaded GI rod to withstand weight of the tray and can have intermediate C channel supports.						
	Factory made customised bends suiting to design to be used .Cost to include same						
1.4.5	450 mm width x 50mm depth x 1.6 mm thickness.						
	Note : Without cover						
	Supply & Installation	Mtrs.	20				
1.4.6	300 mm width x 50mm depth x 1.6 mm thickness.						
	Note : With out cover						
	Supply & Installation	Mtrs.	125				
1.4.7	200 mm width x 50mm depth x 1.6 mm thickness.						
	Note : With out cover						
	Supply & Installation	Mtrs.	15				
1.4.8	150 mm X 50 mm X 1.6mm Light duty Perforated type cable trays						
	Note : With out cover						

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				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
	Supply & Installation	Mtrs.	190				
1.4.9	100 mm X 50 mm X 1.6mm Light duty Perforated type cable trays Note : With out cover						
	Supply & Installation	Mtrs.	RO				
1.4.10	200 mm width x 50mm depth x 1.6 mm thickness. Note : With cover						
	Supply & Installation	Mtrs.	115				
1.4.11	150 mm X 50 mm X 1.6mm Light duty Perforated type cable trays Note : With cover						
	Supply & Installation	Mtrs.	40				
1.4.12	100 mm X 50 mm X 1.6mm Light duty Perforated type cable trays Note : With cover						
	Supply & Installation	Mtrs.	120				
(C)	Hot dipped Perforated type cable trays with concrete pedestrial every 1 mtr in outdoor						
1.4.13	300mm wide with 50 mm depth Light duty 2 mm thick Perforated type cable trays (terrace) Note : With cover						
	Supply & Installation	Mtrs.	RO				
1.4.14	200mm wide with 50 mm depth Light duty 2 mm thick Perforated type cable trays (terrace) Note : With cover						
	Supply & Installation	Mtrs.	40				
1.4.15	100mm wide with 50 mm depth Light duty 2 mm thick Perforated type cable trays (terrace) Note : With cover						
	Supply & Installation	Mtrs.	120				
(D)	Ceiling Raceway						
	Supply, installation of MS powder coated raceways with 1.6mm for body and 1.6mm for cover .The raceways shall be complete with all necessary coupler plates, elbows, tees, bends, reducers, stiffeners and other accessories and hardware in complete as per technical specification & drawing. Junction boxes to be provided with enough supports inside the box.						
	The quoted rate for the raceway to be inclusive of suitable size threaded rod. For size up to 450mm shall be with threaded GI rod & above 450mm with higher dia threaded GI road to withstand weight of the tray and can have intermediate C channel supports.						
	Factory made customised bends suiting to design to be used .Cost to include same						
1.4.16	300mm wide with 50 mm depth Light duty 2 mm raceway						

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SL.NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT	
				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
	Note : With cover						
	Supply & Installation	Mtrs.	30				
1.4.17	200mm wide with 50 mm depth Light duty 2 mm raceway						
	Note : With cover						
	Supply & Installation	Mtrs.	155				
1.4.18	150mm wide with 50 mm depth Light duty 2 mm raceway						
	Note : With cover						
	Supply & Installation	Mtrs.	45				
1.4.19	100mm wide with 50 mm depth Light duty 2 mm raceway						
	Note : With cover						
	Supply & Installation	Mtrs.	225				
(E)	Floor Raceway						
	Supply & Installation of following size GI raceway / wire way with cover, made out of 16 SWG GI for body and 14 SWG GI for cover. Junction boxes to be provided with enough supports inside the box. Raceway installed below screeded floor shall include necessary mounting supports, junction boxes and accessories to fix it firmly to the ground. The raceways shall be fixed to the floor with GI (25mm x 3mm) strips so that there is no movement of the channels when civil work (pouring of cement concrete) is being done. Race ways to be covered with Chicken mesh before concreting. Curing compound to be applied after initial setting of the concrete. All edges, cut faces shall be free of burrs & shall be smooth. Jointing of the raceways to be done using fisher plates, connectors The channels shall be earthed at the boxes and at the joints with 14 SWG bare copper wire with screws so that earth is continuous. Floor chipping cost to be included						
1.4.20	200mm wide with 40 mm depth Light duty 2 mm raceway						
	Note : With cover						
	Supply & Installation	Mtrs.	RO				
1.4.21	100mm wide with 40 mm depth Light duty 2 mm raceway						
	Note : With cover						
	Supply & Installation	Mtrs.	110				
1.4.22	100mm wide with 40 mm depth Light duty 2 mm powder coated raceway						
	Note : With cover						
	Supply & Installation	Mtrs.	20				
(E)	Floor junction box						

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	GI Junction boxes with cover, with 1.6mm for body and 1.6mm for cover to be provided with enough supports inside the box. Height of the box to match to the finished floor level (customisation of junction box to be considered to match the screeded floor)						
1.4.22	125x125x50mm GI junction box						
	Supply & Installation	Nos	391				
1.4.23	175x175x50mm GI junction box						
	Supply & Installation	Nos	RO				
(F)	Basket type tray Providing and Fixing of 4mm dia Cablofill wire mesh cable tray system made out of Electro Zinc Steel Wire Cable trays and bent into final shape. All cable trays, shall be manufactured with a longitudinal 'T-welded' safety edge and Trays shall be constructed with a 50 mm x 100 mm mesh configuration complete with couplers, C mountings and all accessories as required. The rate shall include all necessary supporting structure using appropriate L angles/ Channels etc for the tray size. Tray to withstand the industrial sockets / data boxes if any mounted on them						
1.4.24	600 x 200mm Size	Nos	RO				
1.4.25	Supplying and fabricating of MS structural steel supports for Cable tray L.T.cables using U channels, MS angle iron, bolts, nuts, anchor bolts (Hilti) etc., required for the work, cut to the size, bent to shape, welding, grouting etc., complete. Supports shall be powder coated with required colour to be as per the color of Electrical equipments and requirement of client.	Kgs	50				
TOTAL FOR SECTION-1						0	0
2	SECTION-2 : LT PANELS						
	LT Panel :						
	Supplying, Installation,unloading,,storing ,shifting,Testing & commissioning of Form 4A compartment type indoor(IP 42) LT panels suitable for 415V, 3 phase, 4 Wire 50 Hz AC supply system of suitable size fabricated in compartmentalized design from CRCA sheet steel of 1.6 mm thickness for body , 2mm thickness for frame work and covers, 3mm thickness for gland plates with stiffeners where ever required and shall be dust and vermin proof construction.						
	1. The panel must be have suitable capacity extensible type TPN copper/Aluminium bus bars,Fire retardant DMC/SMC fillings for openings around bus bar near the sectional barriers.						
	2. All MCB's to be provided with terminal blocks in the cable alley with labelling works as per design						
	3. All the LT switchgears shall be compatible to be integrated with BMS and shall be provided with Remote operation & RS-485/Modbus protocol.						

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	4. The breaker should have an integrated short circuit release which gives protection against short circuit in case of failure of microprocessor release.						
	5. MS stand of suitable height to be included suiting to site condition if any.						
	6.Space heaters for main panel to be provided.						
	7. All MCCBs both Incoming & Outgoing shall have LED 'ON / OFF / TRIP' indications without fail.						
	8. CTs shall be of cast resin type only.						
	9. All doors to have double rubber gasket with shutter assembly & door seating frame.						
	10. TM based MCCB's upto 250A & MicroProcessor based for 250A & above.						
	11. The current density for Aluminium busbars shall be 0.8 only.						
	12. The current density for Copper busbars shall be 1.2 -1.4 only.						
	13. All UPS outgoing panels shall have neutral busbars double the size of phase.						
	14. FRLS PVC copper wires shall be used for control wiring						
	15.MIMIC sticker to be considered for main panel						
	16. LOTO provision shall be done for all panels wherever applicable						
	17. Please share detailed discrimination report indicating the type and setting of the breakers considered.						
2.1	Academic block panel	No	1				
2.2	Terrace panel	No					
2.3	Lift Panel	No	2				
2.4	UPS output DB	No	2				
2.5	Kitchen panel	No	1				
2.6	Outdoor lighting panel	No	1				
TOTAL FOR SECTION-2						-	-
3	SECTION-3 : DISTRIBUTION BOARDS						
	Supply, Installation, Testing and Commissioning of MCB Distribution board as per approved installation dwgs.						
	Wall mounted MCB DBs with MS wire way box on top / bottom & on sides. MCBs shall be rated for 10kA with current limiting feature. Dummy ways to be covered with blank plates. All out going ways shall be labelled & laminated.						
	Enclosure:1.2mm CRCA Sheet Steel, Powder Coated						
	Door : Double Door						
	Protection : IP 42						
	Cable Entry : Top & Bottom (As per site condition)						
	For UPS distribution ELCB's shall be harmonic resistant (SI Series)						
	Bus bar : Shall be tinned Copper and 200% rating for UPS DB Neutral Link						

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	MCB's : 10kA 'C' Curve for Lighting & Raw power, 10kA 'D' Curve for UPS Distribution						
	Note:						
	1) Separate Earth bus/Neutral bus for each phase						
	2) Each Circuit shall have yellow ferrules with circuit number.						
	3) Accessories required for installation of DB's on Wall/Column/Gyp Board shall be considered						
	4) DB's shall be covered with powder coated (paint should match with DB Color) wire ways all around and up to ceiling to receive incoming circuits						
	5) Laminated A3 OR A4 size SLD copy shall be pasted inside DB door						
	6) Safe shroud for Neutral link shall be provided						
	(Notes: Local fabrication Not permitted. Only factory made boxes shall be installed)						
A	LIGHTING DB's						
3.1	1Ø, SERVER DB						
	1Ø, 8way SPN DB						
	Incoming : 40A DP RCBO 30mA						
	Outgoing: 4 Nos.16A SP MCB ('C' curve)						
	Supply & Installation	Nos.	RO				
B	LIGHTING & POWER DB						
3.2	1Ø, 16way SPN DB (LRPDB'S)						
	Incoming : 40A DP RCBO 30mA						
	Outgoing: 12 Nos.10A/16A SP MCB ('C' curve)						
	Supply & Installation	Nos.	1				
3.3	1Ø, 12way SPN DB (LRPDB'S)						
	Incoming : 40A DP RCBO 30mA						
	Outgoing: 8 Nos.10A/16A SP MCB ('C' curve)						
	Supply & Installation	Nos.	3				
3.4	1Ø, 20way SPN DB (LDB'S)						
	Incoming : 25A DP RCBO 30mA						
	Outgoing: 16 Nos.10A SP MCB ('C' curve)						
	Supply & Installation	Nos.	9				
3.5	1Ø, 16way SPN DB (LDB'S)						
	Incoming : 25A DP RCBO 30mA						
	Outgoing: 12 Nos.10A SP MCB ('C' curve)						
	Supply & Installation	Nos.	3				
3.6	1Ø, 12way SPN DB (ELDB'S & LDBS)						
	Incoming : 25A DP RCBO 30mA						

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SL.NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT	
				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
	Outgoing: 8 Nos.10A SP MCB ('C' curve)						
	Supply & Installation	Nos.	7				
3.7	1ø, 12way SPN DB (RPDB'S)						
	Incoming : 40A DP RCBO 100mA						
	Outgoing: 8 Nos.10A/16A SP MCB ('C' curve)						
	Supply & Installation	Nos.	9				
3.8	1ø, 16way SPN DB (RPDB'S)						
	Incoming : 40A DP RCBO 100mA						
	Outgoing: 12 Nos.10A/16A SP MCB ('C' curve)						
	Supply & Installation	Nos.	4				
3.9	1ø, 16way SPN DB (ACDB'S)						
	Incoming : 40A DP RCBO 100mA						
	Outgoing: 12 Nos.10A/16A SP MCB ('C' curve)						
	Supply & Installation	Nos.	1				
3.1	1ø, 12way SPN DB (ACDB'S)						
	Incoming : 40A DP RCBO 100mA						
	Outgoing: 8 Nos.10A/16A SP MCB ('C' curve)						
	Supply & Installation	Nos.	1				
3.11	3ø, 8Way TPN RPDBS						
	Incoming - 40A 4P MCB						
	Sub incommer: 3Nos. 32A DP RCCB (100 mA) for each phase						
	Outgoings: 18Nos.16A SP MCB ('C' curve)						
	Supply & Installation	Nos.	5				
3.12	3ø, 12Way TPN RPDBS						
	Incoming - 40A 4P MCB						
	Sub incommer: 3Nos. 32A DP RCCB (100 mA) for each phase						
	Outgoings: 30Nos.16A SP MCB ('C' curve)						
	Supply & Installation	Nos.	1				
C	UPS DB's						
3.13	1ø, 12way SPN DB (UDB'S)						
	Incoming : 40A DP RCBO 300mA						
	Outgoing: 8 Nos.10A/16A SP MCB ('D' curve)						
	Supply & Installation	Nos.	3				
TOTAL FOR SECTION-3							

BILL OF QUANTITIES							
PROJECT :NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU							
LOCATION: BENGALURU							
DESCRIPTION : ELECTRICAL WORKS							
SUBJECT : INTERNAL ELECTRICAL WORKS							
SL.NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT	
				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
4	SECTION-4 : INTERNAL WIRING & POWER RECPTACLES						
	Supply and wiring for primary light point with FRLS Copper wire / cable 1.1KV grade ISI marked PVC insulated multi- strand copper wire / multi core copper flexible cable conforming to IS:694 (with latest ammendments)in ISI marked 25mm dia heavy duty 2.0mm thick electrical grade FRLS PVC conduit with necessary accessories such as bends, collars, junction boxes and pull boxes and with covering covering plate as required as per the site condition on open/surface /concealed in ceiling, wall, column, floor,conforming to IS 9537-3 (1983)(with latest amendments). Including supply and fixing of 5amps flush type modular (plate) control switches fixed in suitable size sheet metal flush box suitable for modular switches and covered with modular siwtch plates and all necessary components and earthing, supply of terminating lugs and all fixing materials,accessories,and interconnections complete as required. This work includes chipping, chasing,clamping,filling and all related minor civil works. The rates shall include all leads,lifts & Staging/scffolding (if any).(Includes of conduit cost)						
4.1	Lighting controlled by MCB : Wiring for primary light point & secondary light points with 2Rx2.5sqmm + 1Rx1.5sqmm FRLS Copper wire in 25mm dia FRLS PVC conduit.						
4.1.1	Primary Points controlled by MCB						
	Supply & Installation	Nos.	55				
4.1.2	For every additional secondary point controlled by MCB						
	Supply & Installation	Nos.	420				
4.2	Lighting controlled by Switch : Wiring for primary light point & secondary light points with 2Rx2.5sqmm + 1Rx1.5sqmm FRLS Copper wire in 25mm dia FRLS PVC conduit.						
4.2.1	Primary Points						
	Supply & Installation	Nos.	570				
4.2.2	For every additional secondary point						
	Supply & Installation	Nos.	600				
4.3	Lighting controlled by sensor + Switch : Wiring for primary light point & secondary light points with 2Rx2.5sqmm + 1Rx1.5sqmm FRLS Copper wire in 25mm dia FRLS PVC conduit.						
4.3.1	Primary Points						
	Supply & Installation	Nos.	185				
4.3.2	For every additional secondary point						
	Supply & Installation	Nos.	360				
4.3.3	Ceiling fan point controlled by a switch and stepped type electronic regulator. Rate to be include of 10mm MS hook housed in 16 gauge MS box flush mounted in celing slab. Rate to include cost of regulator and switch.						

BILL OF QUANTITIES							
PROJECT :NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU							
LOCATION: BENGALURU							
DESCRIPTION : ELECTRICAL WORKS							
SUBJECT : INTERNAL ELECTRICAL WORKS							
SL.NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT	
				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
	Supply & Installation	Nos.	255				
4.3.4	Supply & Installation of 1200mm sweep ceiling mounted BLDC fan with 1mtr rod and fan hook to fixing the fan and required nuts and bolts following specs. 1200 MM Fan Size :1200 MM, Input Power : 30-35W @ 385rpm 25W @ 320rpm Maximum Speed: 385 RPM, Power Factor >0.9, Voltage Range :90-300 Vac without remote control with electronic type regulator. Regulator has shown in separate line item.						
	Supply & Installation	Nos.	230				
4.3.5	Supply & Installation of 900mm sweep ceiling mounted BLDC fan with 1mtr rod and fan hook to fixing the fan and required nuts and bolts following specs. 900 MM Fan Size :900 MM, Input Power : 30-35W @ 385rpm 25W @ 320rpm Maximum Speed: 385 RPM, Power Factor >0.9, Voltage Range :90-300 Vac without remote control with electronic type regulator. Regulator has shown in separate line item.						
	Supply & Installation	Nos.	25				
4.3.6	Exhaust fan point with ceiling rose provided near fan and controlled by a 6A switch.						
	Supply & Installation	Nos.	RO				
4.3.7	Installation of Exhaust Fan Dia of 300mm with PVC self operated louvers and required fixing accessories						
	Supply & Installation	Nos.	RO				
4.3.8	Supply & Installation of Wall mounted fan point						
	Supply & Installation	Nos.	5				
4.4	Circuit wiring for Lighting :						
	Supply and wiring of FRLS, 1.1KV grade, ISI marked, PVC insulated multistranded copper wire / cable of below sizes along with earth wire conforming to IS:694 (with latest amendments) in existing 25mm dia FRLS PVC conduit from DB to the first point / switch board/sensor as required and approved by the consultant / client.as per the site condition on open/surface /concealed in ceiling, wall, column, floor as required. .(Includes of conduit cost)						
	Circuit wiring for Raw power & UPS Power sockets :						
	Supply & Wiring for Raw Power and UPS circuit of the following sizes with FRLSH PVC insulated & sheathed Multi core copper cable, conforming to IS:694 (with latest amendments) in existing conduit/raceway from DB to the sockets & including looping between sockets of same circuit as required and approved by the consultant/client. The rates shall include all leads,lifts & Staging/scffolding (if any).as per the site condition on open/surface /concealed in ceiling, wall, column, floor as required. (Includes of conduit cost) Color coding to be maintained : For Raw power : Black - Outer sheath, Red-Black-Green, Yellow-Black-Green, Blue-Black-Green. For UPS : White - Outer sheath, Red-Black-Green, Yellow-Black-Green, Blue-Black-Green.						

BILL OF QUANTITIES							
PROJECT :NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU							
LOCATION: BENGALURU							
DESCRIPTION : ELECTRICAL WORKS							
SUBJECT : INTERNAL ELECTRICAL WORKS							
SL.NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT	
				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
4.4.1	2R x 2.5 sq.mm + 1 R x 1.5 sq.mm earth wire for Light Circuit Mains Supply & Installation	Mtrs	9000				
4.4.2	2R x 4 sq.mm + 1 R x 2.5 sq.mm earth wire for Power Circuit Mains Supply & Installation	Mtrs	RO				
4.4.3	1.2 mtrs 3C x 2.5 sq.mm coper cable for lights (junction box to light drop) transparent/white Supply & Installation	Mtrs	340				
4.4.4	1.8 mtrs 3C x 2.5 sq.mm coper cable for lights (junction box to light drop) transparent/white Supply & Installation	Mtrs	25				
4.4.5	3C x 4 sq.mm coper cable for Power Circuit Mains for exhaust fans Supply & Installation	Mtrs	500				
4.4.6	3C x 2.5 sq.mm coper cable for Power Circuit Mains Supply & Installation	Mtrs	14500				
4.4	Conduits for Circuit wiring : Supplying and fixing of following sizes of 2.0mm thick electrical grade FRLS PVC conduit surface run /concealed in ceiling, wall, column, floor, conforming to IS 9537-3 (1983) (with latest amendments) with necessary fixing accessories for ckt. mains or submains as required with necessary accessories such as bends, collars, junction boxes and pull boxes & wire and with covering covering plate as required as per the site condition and as approved by the client/ consultants. (From DB to Switch plate) Conduit color code: Power conduit - Black,Security conduit - Blue, Fire alarm conduit -Red, Low voltage conduit - Brown, UPS Conduit - Green(may vary as per architect intent)						
4.4.1	25mm dia concealed Conduit power + data Supply & Installation	Mtrs	5600				
4.4.2	32mm dia concealed Conduit power + data Supply & Installation	Mtrs	525				
4.4.3	32mm dia floor Conduit power + data Supply & Installation	Mtrs	60				
4.4.4	25mm dia floor Conduit power + data Supply & Installation	Mtrs	1255				
4.4.5	32mm dia open Conduit power + data Supply & Installation	Mtrs	780				

BILL OF QUANTITIES							
PROJECT :NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU							
LOCATION: BENGALURU							
DESCRIPTION : ELECTRICAL WORKS							
SUBJECT : INTERNAL ELECTRICAL WORKS							
SL.NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT	
				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
4.4.6	25mm dia open Conduit power + data	Supply & Installation	Mtrs	2250			
4.4.7	20mm dia Flexible Conduit.	Supply & Installation	Mtrs	50			
4.4.6	25mm dia Flexible Conduit.	Supply & Installation	Mtrs	50			
4.4.7	20mm dia Polyamide Flexible Conduit Gland	Supply & Installation	Nos	50			
4.4.8	25mm dia Polyamide Flexible Conduit Gland	Supply & Installation	Nos	600			
4.4.9	32mm dia Polyamide Flexible Conduit Gland	Supply & Installation	Nos	25			
4.5	PLUG & SOCKETS :						
4.5.1	Supply and installation of 3 No. 6A 3 pin/ 5 pin shuttered universal socket controlled by 1 No. 6 amps SP modular switch , with modular plate and cover in front on table, without back box , with interconnection etc. as required.	Supply & Installation	Nos.	681			
4.5.2	Supply and installation of 1 No. 6A 3 pin/ 5 pin shuttered universal socket with modular plate and cover in front on surface or in recess, with back box , with interconnection etc. as required.	Supply & Installation	Nos.	88			
4.5.3	Supplying and installation of 3/5 pin 6/16 amps modular socket outlet controlled by 1 No. 16 amps SP modular switch, with modular plate and cover in front on surface or in recess, with suitable back box,interconnection etc. as required. For handrier	Supply & Installation	Nos.	36			
4.5.4	Supplying and installation of 3/5 pin 6/16 amps modular socket outlet controlled by 1 No. 16 amps SP modular switch, with modular plate and cover in front on surface or in recess, with suitable back box,interconnection etc. as required. For cleaning	Supply & Installation	Nos.	203			
4.5.5	Supplying and installation of 3/5 pin 6/16 amps modular socket outlet controlled by 1 No. 16 amps SP modular switch, with modular plate and cover in front on surface or in recess, with suitable back box,interconnection etc. as required. For AC	Supply & Installation	Nos.	34			

BILL OF QUANTITIES							
PROJECT :NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU							
LOCATION: BENGALURU							
DESCRIPTION : ELECTRICAL WORKS							
SUBJECT : INTERNAL ELECTRICAL WORKS							
SL.NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT	
				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
4.5.6	Supplying and installation of 3/5 pin 16 amps modular socket outlet controlled by 1 No. 16 amps SP modular switch, with modular plate and cover in front on surface or in recess, with suitable back box,interconnection etc. as required. For projector						
	Supply & Installation	Nos.	14				
4.5.7	Supply and installation of 3 No. 16A 3 pin/ 5 pin shuttered universal socket controlled by 1 No. 16 amps SP modular switch , with modular plate and cover in front on surface or in recess, with back box , with interconnection etc. as required.						
	Supply & Installation	Nos.	16				
4.5.7	Readymade floor mounted Junction box with provision to locate 1 set of 2x6A socket controlled by 16A switch and provision to mount 2Data outlets - Box to be of height adjustable type and match to false floor height of 150mm. Top of the floor box to be flushed with the floor level / carpet finish . Box to exclude cost of sockets. (However the box height should match as per the site condition. No extra cost shall be paid for any deviation on the dimension)						
	Supply & Installation	Nos.	25				
4.5.8	Supply and installation of weather proof 40A MCB with ELCB box for AC IP65						
	Supply & Installation	Nos.	2				
4.5.9	Supply and installation of weather proof 20A MCB with ELCB box for AC IP65						
	Supply & Installation	Nos.	1				
4.6	INDUSTRIAL TYPE SOCKETS						
4.6.1	Supply and Installation of 1 Phase, 16A Industrial type socket lockable with Straight plug (IP 44 IK 08) of Plastic moulded all necessary interconnection wires etc.for sever room						
	Supply & Installation	Nos.	4				
4.6.2	Supply and fixing of 3 Phase 16A Tempra Industrial plug and socket (IP 44,IK-09)of Plastic moulded, 4P MCB , and with all necessary interconection wires etc. (For Kitchen Sockets)						
	Supply & Installation	Nos.	RO				
4.6.3	Supply and Installation of Surface mounted Type 3 Phase, 40A Clipsal Industrial socket with Interlock switched Socket (IP 66/67, IK-09) of Plastic moulded, with din rail mounted controlled by 100mA 4P RCCB , with all necessary interconnection wires etc.push button near the units. (For Kitchen Sockets)						
	Supply & Installation	Nos.	RO				
4.6.4	Supply and Installation of 1 Phase , DP 16A Isolator with Enclosure(IP 66/67, IK-09) of Plastic moulded, and with all necessary interconnection wires etc.						
	Supply & Installation	Nos.	RO				

BILL OF QUANTITIES							
PROJECT :NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU							
LOCATION: BENGALURU							
DESCRIPTION : ELECTRICAL WORKS							
SUBJECT : INTERNAL ELECTRICAL WORKS							
SL.NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT	
				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
4.7	Supply, Installation, Testing and End Termination of Industrial type plug and sockets wiring for kitchen equipments :						
4.7.1	3Cx2.5 Sq.mm Cu. Flexible cable	mtrs	RO				
4.7.2	3Cx4 Sq.mm Cu. Flexible cable	mtrs	RO				
4.7.3	3Cx6 Sq.mm Cu. Flexible cable	mtrs	RO				
4.7.4	4Cx6 Sq.mm + 1Cx4Sqmm. Cu. Flexible cable	mtrs	RO				
4.7.5	4Cx4 Sq.mm + 1Cx2.5Sqmm. Cu. Flexible cable	mtrs	RO				
4.7.6	4Cx10 Sq.mm + 1Cx6Sqmm. Cu. Flexible cable	mtrs	RO				
TOTAL FOR SECTION-4							
5	SECTION-5 : LIFT WIRING SYSTEM						
5.1	Installation, Testing & Commissioning of Lift DB as per lift vender requirement.						
	Installation	Nos.	2				
5.2	Supply & Installation of Lift way Light point wiring with 2Rx2.5 Sqmm + 1Rx1.5 Sqmm FRLS Cu. Wire drawn in 20mm dia MS Conduit with all required accessories. (to be followed as per ceig requirement) for all floors GF + 5 floors.						
	Supply & Installation	Nos.	2				
5.3	Supply & Installation of Lift way power socket point wiring with 6/16 5Pin socket controlled by 16A DP switch using 2Rx4 Sqmm+ 1Rx2.5 Sqmm FRLS Cu. Wire drawn in 25mm dia MS Conduit with all required accessories.(to be followed as per ceig requirement) for all floors GF + 5 floors.						
	Supply & Installation	Nos.	2				
5.4	Installation and Comminsioing of 10W LED Bulkhead fitting with all fixing accessories. (Lamp colour 4000K)						
	Area of usage : Lift Shafts						
	Installation	Nos.	10				
5.5	Scope to include obtaining permission for installation of Lifts from State department(EB)/CEIG authorities. Necessary statutory approvals from the CEIG/State department(EB) including submission of drawings, necessary details, co ordination with all the agencies/Local Govt departments involved etc., for obtaining the CEIG apporval for Lifts operations. (Note:-Statutory demand note fee will be paid by clinet).	LS	1				
TOTAL FOR SECTION-5							
6	SECTION-6 : EARTHING SYSTEM						

BILL OF QUANTITIES							
PROJECT :NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU							
LOCATION: BENGALURU							
DESCRIPTION : ELECTRICAL WORKS							
SUBJECT : INTERNAL ELECTRICAL WORKS							
SL.NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT	
				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
6.1	GI Earth plate 600 x 600 x 6mm GI plate confirming to IS 3043 with latest ammendments & as per IS / NBC standards.The RCC chamber along with Medium duty FRP recessed cover of 450mm x 450mm should be provided which is flushed to the floor level. The job is including excavation,civil work & the excess soil have to remove from the site location. The resistance of earth pit should be less than 1.0 ohm.						
	Supply & Installation	Nos.	8				
6.2	Copper Earth Plate 600 x 600 x 3mm Copper plate confirming to IS 3043 with latest ammendments & as per standards. The RCC chamber along with Medium duty FRP recessed cover of 450mm x 450mm should be provided which is flushed to the floor level.The job is including excavation,civil work & the excess soil have to remove from the site location. The resistance of earth pit should be less than 1.0 ohm.						
	Supply & Installation	Nos.	2				
6.3	Supply and laying following sizes of GI/Copper Wire/strips including supply of fixing clamps and accessories when laid inside the building and inclusive of excavation & refilling of earth when laid outside the building and interconnections with earth pit and equipment, terminations/ interconnections in an approved manner as per IS:3043 (with latest amendments) inclusive of supply of all hardwares complete as required.GI conductor joints shall be bolted and joints shall be protected with bitumen paint.Copper conductor joint shall be brazed or rivetted .The equipment connection shall be bolted using galvanized hardware or bolted by using passivated hardware.						
a	Providing and fixing 25mm x 6mm Cu strip	Mtr	RO				
b	Providing and fixing 25mm x 3mm Cu strip	Mtr	RO				
c	Providing and fixing 50mm x 10mm GI strip	Mtr	50				
c	Providing and fixing 50mm x 6mm GI strip	Mtr	25				
d	Providing and fixing 25mm x 6mm GI strip	Mtr	1580				
e	Providing and fixing 25mm x 3mm GI strip	Mtr	395				
f	Providing and fixing of 8 SWG GI Wire	Mtr	730				
6.5	Providing and fixing earth bus of 2Rx25x6 mm GI strip on surface with suitable fixing arrangement (insulator) as required.	Nos	10				
6.6	Providing and fixing earth bus of 2Rx25x6 mm copper strip on surface with suitable fixing arrangement (insulator) as required.	Nos	RO				

BILL OF QUANTITIES							
PROJECT :NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU							
LOCATION: BENGALURU							
DESCRIPTION : ELECTRICAL WORKS							
SUBJECT : INTERNAL ELECTRICAL WORKS							
SL.NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT	
				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
	TOTAL FOR SECTION-6						
8	SECTION-8 : MISCELLANEOUS						
8.1	Shock treatment chart as approved by Electrical board and framed and hanged in a pre-dominant position.	No.s.	1				
8.2	Supplying and fixing of First-aid box for five persons, containing materials confirming to IS:2217-1963	No.s.	1				
8.3	Supplying and fixing of as per IE-Rules First-aid chart on the existing wall including mounting accessories etc. as required.	No.s.	1				
8.4	Supplying of Electrical resistant 1.1 kV grade rubber hand gloves pair of 15" size as per IS 47701991	Pairs	1				
8.5	Supply & Installation of of Electro mat nominal 2.0 mm thick 1MTR width, 10MTR length class A Voltage up to 3.3 KV electrically insulated PVC Synthetic mat confirming to IS:15652:2006 having minimum dielectric strength of 30kv Colour Blue (Fire Retardant)	Nos	4				
8.6	Display of Laminated Electrical inspectorate Approved Drgs & SLD A1/A0 Size. (For Individual Blocks)	No.s.	1				
8.7	Supply & Installation of fire buckets stand with 4 Nos of fire buckets in the stand duly filled with sand. The stand shall be fabricated in the approved manner of the appropriate authorities and located outside of Electrical Panel Room	Nos.	1				
8.8	Danger signage stickers on all the DB frames	Nos.	48				
8.9	Supply, installation of powder coated 'C' channel support with thread rod support for suspending the lights below services and to route cable in same for connectivity with necessary accessories. (Support for fixtures below AC duct)	Nos.	RO				
8.10	As built drawings:						
	Preparation and Submission of as built drawings of total work executed (5 Sets hard and 5 Sets soft copy) Hard copies in A0 size and soft copy in CD / Pendrive	Nos.	1				
8.11	Supply & Erection of adjustable Powder Coated Supports for Lighting sensor. Erection of supports to be coordinated with vendor. The contractor to ensure the proper coordination is been done & supports are installed on the desired location of vendor	Nos.	150				
8.12	Wall chasing and refilling with cement mortar for wall conduiting (2"x2")	RMtrs.	RO				
8.13	fire sealant	CMtrs.	10				

BILL OF QUANTITIES							
PROJECT :NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU							
LOCATION: BENGALURU							
DESCRIPTION : ELECTRICAL WORKS							
SUBJECT : INTERNAL ELECTRICAL WORKS							
SL.NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT	
				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
8.14	1.2-1.5m Vertebraes for desks.	Nos.	RO				
TOTAL FOR SECTION-8							
8	SECTION-8 : UPS SYSTEM						
8.1	Supplying and fixing of 20KVA UPS system with 15 min battery backup inculding cabinets , racks , fixing accessories as required.	No.s.	1				
a	1 x 20 KVA 3phase in 1 phase out IGBT INVERTER System in PRS configuration as specified complete with : IGBT Rectifier / Charger, 230V, +15%,50Hz, + 5%, Static inverter, Static switch & bypass changeover switch Controls, Switchgear, with input pf of 0.9, system power walk-in upto 20 secs,Inputcurrent harmonic distortion(THD) <10%,Rectifier DC Voltage Ripples<1%, Rectifier DC Current ripples max 5% of battery capacity and all accessories with earthing as per the broad power scheme						
b	BATTERIES: 12Volts batteries for item no. 8.1 above 20kVA UPS with 15 Mins back-up, Sealed maintenance free, Valve regulated type with rack. End caps to be provided for batteries to avoid corrotion.						
c	OTHER ACCESSORIES: Battery cabinet for item no.8.1.b above with suitable ventilators, copper cables/buslinks between batteries, copper cables between UPS & batteries, DC MCCB Box, DC isolator panel for battery strings (DC Isolator box shall be individual for each UPS / Battery string).						
8.2	Supplying and fixing of 7.5KVA UPS system with 30 min battery backup inculding cabinets , racks , fixing accessories as required.	No.s.	1				
a	1 x 7.5 KVA 3phase in 1phase out IGBT INVERTER System in PRS configuration as specified complete with : IGBT Rectifier / Charger, 230V, +15%,50Hz, + 5%, Static inverter, Static switch & bypass changeover switch Controls, Switchgear, with input pf of 0.9, system power walk-in upto 20 secs,Inputcurrent harmonic distortion(THD) <10%,Rectifier DC Voltage Ripples<1%, Rectifier DC Current ripples max 5% of battery capacity and all accessories with earthing as per the broad power scheme						
b	BATTERIES: 12Volts batteries for item no. 8.2 above 7.5kVA UPS with 30 Mins back-up, Sealed maintenance free, Valve regulated type with rack. End caps to be provided for batteries to avoid corrotion.						
c	OTHER ACCESSORIES: Battery cabinet for item no.8.2.b above with suitable ventilators, copper cables/buslinks between batteries, copper cables between UPS & batteries, DC MCCB Box, DC isolator panel for battery strings (DC Isolator box shall be individual for each UPS / Battery string).						
8.3	Supplying and fixing of 10KVA UPS system with 90 min battery backup inculding cabinets , racks , fixing accessories as required.	No.s.	1				

BILL OF QUANTITIES							
PROJECT :NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU							
LOCATION: BENGALURU							
DESCRIPTION : ELECTRICAL WORKS							
SUBJECT : INTERNAL ELECTRICAL WORKS							
SL.NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT	
				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
a	1 x 10 KVA 3phase in 1phase out IGBT INVERTER System in PRS configuration as specified complete with : IGBT Rectifier / Charger, 230V, +15%,50Hz, + 5%, Static inverter, Static switch & bypass changeover switch Controls, Switchgear, with input pf of 0.9, system power walk-in upto 20 secs,Inputcurrent harmonic distortion(THD) <10%,Rectifier DC Voltage Ripples<1%, Rectifier DC Current ripples max 5% of battery capacity and all accessories with earthing as per the broad power scheme						
b	BATTERIES: 12Volts batteries for item no. 8.3 above 10kVA UPS with 90Mins back-up, Sealed maintenance free, Valve regulated type with rack. End caps to be provided for batteries to avoid corrotion.						
c	OTHER ACCESSORIES: Battery cabinet for item no.8.3.b above with suitable ventilators, copper cables/buslinks between batteries, copper cables between UPS & batteries, DC MCCB Box, DC isolator panel for battery strings (DC Isolator box shall be individual for each UPS / Battery string).						
TOTAL FOR SECTION-9							

SUMMARY						Total Supply Amount	Total Installation Amount
1	SECTION-1 : INTERNAL CABLES & CABLE TRAY					-	-
2	SECTION-2 : LT PANELS					-	-
3	SECTION-3 : DISTRIBUTION BOARDS					-	-
4	SECTION-4 : INTERNAL WIRING & POWER RECPTACLES					-	-
5	SECTION-5 : LIFT WIRING SYSTEM					-	-
6	SECTION-6 : EARTHING SYSTEM					-	-
7	SECTION-8 : MISCELLANEOUS					-	-
8	SECTION-8 : UPS SYSTEM					-	-
TOTAL :						-	-
GRAND TOTAL :						-	-

BILL OF QUANTITIES							
PROJECT :NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU							
LOCATION: BENGALURU							
DESCRIPTION : ELECTRICAL WORKS							
SUBJECT : INTERNAL LT WORKS							
SL.NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT	
				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
	SECTION-1 :ACCESS						
1	Biometric face Readers for class rooms: Supply, Installation, Testing and Commssioining of Biometric fingerprint card reader with UL Certified sensor with 3,000 face templates, 250,000 IDs in authorized user list, 1 Million logs, unlimited on card, False Rejection / Acceptance Rate 0.01% / 0.001%, IP65 and vandal resistant (IK08) as per technical specifications.	Nos	20				
	SECTION-2 : CCTV						
1	2MP Fixed Bullet Camera Supply, Installation, Testing & Commissioning of 2MP Fixed Bullet Camera 2MP 1920(H)×1080(V))@60FPS, 1/2.8" Progressive CMOS (Scanning System), Focal Length: Fixed 3.6mm, Color 0.002lux @ F1.6(AGC ON); B/W 0 lux @ IR ON, FOV: Horizontal: Horizontal: 87°, Vertical:44°, Diagonal: 104°,Min. Object Distance :2m ,IR Distance: 30m, S/N Ratio ≥55dB , BLC, 3D DNR, WDR: 120dB, AGC, White Balance, Privacy Masking (4 Zone),IR cut filter with auto switch(Day/Night/Auto/Image/Schedule) , Electronic Shutter: 1/5 ~ 1/20000sec, Including: Built-in microphone, Video Compression: H.264 & H.265, Unicast/Multicast Streaming, Video Streams: Triple-Stream, Primary Stream: 60fps - 1080P(1920x1080),960P(1280x960),720P(1280x720), Secondary Stream: 30fps @ 720P(1280x720),VGA(640x480),QVGA(320x240),Tertiary Stream: 30fps VGA(640x480), QVGA(320x240), Bitrate: 256Kbps ~ 8Mbps (CBR/VBR), Protocol : TCP/IP,HTTP,DHCP,DNS,DDNS,RTP/RTSP,SMTP,NTP,UPnP,SNMP,HTTPS,FTP, ONVIF(Profile S/G/T), AI Support: Face Detection, 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, Web Browser : IE10/11, Safari V12.1 above, Firefox V.52 above, Google chrome V.57 above Edge V.79 above Inbuild Micro SD slot: up to 256GB SD Card, Security : IP address filter;complicated password;Authenticated username and password , IP67 & Metal Body,Hardware Reset, D12V/POE(IEEE802.3af),Power Consumption(IR OFF) : 2W-3W,Power Consumption(IR ON) :4W-5.5W , Operating Conditions : -35~+60°C/less than ≤ 95% RH , Certificates: CE, BIS, FCC, ROHS and REACH, EN55032:2015+A11:2020,EN 55035:2017+A11:2020,EN 61000-3-2:2014, EN61000-3-3:2013+A1:2019 .	Nos	19				
2	2MP Fixed Dome Camera						

BILL OF QUANTITIES							
PROJECT :NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU							
LOCATION: BENGALURU							
DESCRIPTION : ELECTRICAL WORKS							
SUBJECT : INTERNAL LT WORKS							
SL.NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT	
				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
	Supply, Installation, Testing & Commissioning of 2MP Fixed Dome Camera 2MP 1920(H)×1080(V))@60FPS, 1/2.8" Progressive CMOS (Scanning System), Focal Length: Fixed 3.6mm, Color 0.002lux @ F1.6(AGC ON); B/W 0 lux @ IR ON, FOV: Horizontal: Horizontal: 87°, Vertical:44°, Diagonal: 104°,Min. Object Distance :2m ,IR Distance: 30m, S/N Ratio ≥55dB , BLC, 3D DNR, WDR: 120dB, AGC, White Balance, Privacy Masking (4 Zone),IR cut filter with auto switch(Day/Night/Auto/Image/Schedule) , Electronic Shutter: 1/5 ~ 1/20000sec, Including: Built-in microphone, Video Compression: H.264 & H.265, Unicast/Multicast Streaming, Video Streams: Triple-Stream, Primary Stream: 60fps - 1080P(1920x1080),960P(1280x960),720P(1280x720), Secondary Stream: 30fps @ 720P(1280x720),VGA(640x480),QVGA(320x240),Tertiary Stream: 30fps VGA(640x480), QVGA(320x240), Bitrate: 256Kbps ~ 8Mbps (CBR/VBR), Protocol : TCP/IP,HTTP,DHCP,DNS,DDNS,RTP/RTSP,SMTP,NTP,UPnP,SNMP,HTTPS,FTP, ONVIF(Profile S/G/T), AI Support: Face Detection, 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, Web Browser : IE10/11, Safari V12.1 above, Firefox V.52 above, Google chrome V.57 above Edge V.79 above Inbuild Micro SD slot: up to 256GB SD Card, Security : IP address filter;complicated password;Authenticated username and password , IP67 & Metal Body,Hardware Reset, D12V/POE(IEEE802.3af),Power Consumption(IR OFF) : 2W-3W,Power Consumption(IR ON) :4W-5.5W , Operating Conditions : -35~+60°C/less than ≤ 95% RH , Certificates: CE, BIS, FCC, ROHS and REACH, EN55032:2015+A11:2020,EN 55035:2017+A11:2020,EN 61000-3-2:2014, EN61000-3-3:2013+A1:2019 .	Nos	125				
3	128 Channel NVR						

BILL OF QUANTITIES							
PROJECT :NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU							
LOCATION: BENGALURU							
DESCRIPTION : ELECTRICAL WORKS							
SUBJECT : INTERNAL LT WORKS							
SL.NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT	
				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
	Supply, Installation, Testing and Commissioning of 128 Channel NVR Embedded Linux , 16 SATA interface, Up to 128 channel Video Inputs, NVR shall have throughput of incoming bandwidth 1024Mbps & outgoing 800 Mbps, 4 numbers of HDMI Video output. Supports live view, storage, and playback at 1- 8MP resolution, Shall be capable of live streaming & Storing 128 cameras, Shall support Net HDD, Storage up to 12TB Surveillance HDD or storage up to 18TB enterprise class per HDD slot, RAID0, RAID1, RAID5, RAID6, RAID10 Support ,Shall support audio, G.711A/G.711U, Shall support 1 E-sata port, 2x RJ45 10M/100M/1000M ports, Audio input 1 channel, Audio Output 1 channel output , Alarm input 16 channel, Alarm Output 4 channel output, USB2.0*1, USB3.0*1+USB2.0*1 port , RS485*1 ,RS232 *1, Protocol :IPv4, IPv6, TCP/IP, HTTP, HTTPS, DDNS, RTMP, SMTP(SSL), SNMP, DHCP, PPPoE, UPnP, NTP, P2P, FTP, Simultaneously record multiple streams in any combination of H.264/H.265/H.264+/H.265+, support Start, stop, normal play, back play, frame by frame forward, full screen, Fast forward / backward (2x, 4x, 8x, 16x), Slow forward (1/2x, 1/4x, 1/8x, 1/16x), Add custom/ Default Tag for any events at the time of playback, digital zoom, video clip, sub stream/main-stream, playback video bar, Shall be able to take actions pre and post recording, Send email, show message, send email, FTP upload video or screenshot, Cloud upload video or screenshot, full screen, voice prompts, Alarm output trigger, PTZ linkage on events, support the display of VCA metadata on video live-view and and playback, Supports AI from camera side : Face Detection, Human Detection, Vehicle Detection, Perimeter Intrusion Detection, Line Crossing Detection, Cross Counting, Heat Map, Crowd Density Detection, Queue Length Detection, License Plate Detection, Rare Sound Detection, Stationary Object Detection, Sound Detection, Capable to show statistics and graphs of events for different interval of time search, Shall support S.M.A.R.T HDD function for HDD status, Onvif Support , Power Supply : AC 230V SMPS, ATX 250W ,Consumption without HDD : ≤20W , Temperature : Temperature: 0°C~+40°C (32°F ~ 104°F) ;Humidity: Less than 90%RH , 440*460*149mm (W×D×H) Dimensions ,Certificates:CE, BIS, FCC, ROHS and REACH, EN55032:2015+A11:2020, EN 55035:2017+A11:2020, EN 61000-3-2:2014, EN61000-3-3:2013+A1:2019 .	Nos	1				
4	32 Channel NVR						

BILL OF QUANTITIES

PROJECT :NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU



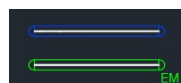


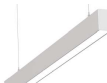
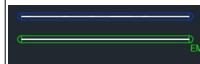
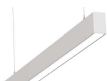










LOCATION: BENGALURU
















DESCRIPTION : ELECTRICAL WORKS










SUBJECT : INTERNAL LT WORKS

SL.NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT	
				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
	Supply, Installation, Testing and Commissioning of 32 Channel NVR Embedded Linux , 4 SATA interface, Up to 32 channel Video Inputs, NVR shall have throughput of incoming bandwidth 256Mbps & outgoing 128 Mbps, 2* HDMI , 1 *VGA Video output. Supports live view, storage, and playback at 1- 8MP resolution, Shall be capable of live streaming & Storing 32 cameras, Shall support Net HDD, Storage up to 10 TB Surveillance HDD, Shall support audio, G.711A/G.711U, Shall support 1 E-sata port, 2x RJ45 10M/100M/1000M ports, Audio input 1 channel, Audio Output 1 channel output , Alarm input 16 channel, Alarm Output 1 channel output, USB2.0*1, USB3.0*1+USB2.0*1 port , RS485*1, Protocol :IPv4, IPv6, TCP/IP, HTTP, HTTPS, DDNS, RTMP, SMTP(SSL), SNMP, DHCP, PPPoE, UPnP, NTP, P2P, FTP , Simultaneously record multiple streams in any combination of H.264/H.265/H.264+/H.265+, support Start, stop, normal play, back play, frame by frame forward, full screen, Fast forward / backward (2x, 4x, 8x, 16x), Slow forward (1/2x, 1/4x, 1/8x, 1/16x), Add custom/ Default Tag for any events at the time of playback, digital zoom, video clip, sub stream/main-stream, playback video bar, Shall be able to take actions pre and post recording, Send email, show message, send email, FTP upload video or screenshot, Cloud upload video or screenshot, full screen, voice prompts, Alarm output trigger, PTZ linkage on events, support the display of VCA metadata on video live-view and and playback, Supports AI from camera side : Face Detection, Human Detection, Vehicle Detection, Perimeter Intrusion Detection, Line Crossing Detection, Cross Counting, Heat Map, Crowd Density Detection, Queue Length Detection, License Plate Detection, Rare Sound Detection, Stationary Object Detection, Sound Detection, Capable to show statistics and graphs of events for different interval of time search, Shall support S.M.A.R.T HDD function for HDD status, Onvif Support , Power Supply : DC12V/2A , Consumption without HDD : 12W , Temperature : - 10°C~+50°C (14°F ~ 122°F) Humidity : Less than 90%RH , 300X227X53mm (W×D×H) Dimensions , Certificates: CE, BIS, FCC, ROHS and REACH, EN55032:2015+A11:2020, EN 55035:2017+A11:2020, EN 61000-3-2:2014, EN61000-3-3:2013+A1:2019 .	Nos	1				
5	Hard Disk 12TB enterprise Grade Hard Disk	Nos	14				
6	Hard Disk 10TB enterprise Grade Hard Disk	Nos	4				
7	24 Port Gigabite Poe Switch With SFP	Nos	4				
8	24-port 1000base-T Gigabit PoE+ Smart Managed Switch, 4 dedicated 100/1000 Base-X Fiber SFP ports, Bandwidth: 56 Gbps non-blocking, Mean Time Between Failures (MTBF): 1,071,000 hours or more, PoE budget: 380W, Storage Temperature: -20° to 70°C (– 4° to 158°F), Per port: Speed, Link, Activity, Syslog (RFC 3164), Admin access control via Radius and TACACS+, Remote/Cloud Manageability, L2 MAC, L3 IP and L4 Port ACLs, CE mark, commercial, UL listed (UL 1950)/cUL IEC 950/EN 60950.						
9	16 Port Gigabite Poe Switch With SFP	Nos	4				
10	16 -port 10/100/1000 Base-T PoE+ Managed Switch with Fiber Uplinks, 2 # 1000 Base-X SFP uplink ports, CPU: 400 MHz Cortex-A9 Single Core, 512MB RAM, 16MB SPI + 256MB NAND FLASH, Heat Dissipation: 768.15 BTU/hr, Operating temperature: 0° to 50°C , Storage temperature: -(20° to 70° C), PoE Budget- 180 Watt CE EN 55022, EN 61000 and EN 55024, IEC 60950-1:2005 (ed.2)+A1:2009+A2:2013.						
11	8 Port Gigabite Poe Switch Layer 2 For Indoor Switch	Nos	3				

BILL OF QUANTITIES							
PROJECT :NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU							
LOCATION: BENGALURU							
DESCRIPTION : ELECTRICAL WORKS							
SUBJECT : INTERNAL LT WORKS							
SL.NO.	DESCRIPTION	UNIT	QTY	RATE		AMOUNT	
				SUPPLY	INSTALLATION	SUPPLY	INSTALLATION
12	10M/100M/1G RJ-45 copper ports,(75W PoE budget),100M/1G SFP (fiber) ports 2 (dedicated),CPU 400 MHz Cortex-A9 Single Core, 512MB RAM 16MB SPI + 256MB NAND FLASH,Bandwidth 20Gbps,Auto-VoIP VLAN / Auto-Voice VLAN Yes, based on OUI bytes (default database and user-based OUIs) in the phone source MAC address,Auto-VoIP Yes, based on protocols (SIP, H.323 and SCCP). Prioritizes traffic to a higher queue upto 40 degree.						
13	24 Port Network Gigabite Switch Layer 2	Nos	1				
14	Rack 4U	Nos	7				
15	RACK 35U	Nos	1				
16	Transmitter For Lift Camera	Nos	2				
17	Receiver For Lift Camera	Nos	2				
18	Power Supply For Lift Camera	Nos	2				
19	SFP Module	Nos	4				
20	Media Converter	Nos	1				
21	Fiber Patch Chord	Nos	6				
22	CAT6A Patch Chord 1 Mtr	Nos	50				
23	RJ45 Connector	Nos	3				
24	Camera Box Outdoor	Nos	19				
25	Camera Box Indoor	Nos	127				
26	CAT6A Cable	Mtrs	9000				
27	PVC Conduit Pipe	Mtrs	4000				
28	6 core Armoured Fiber Cable	Mtrs	2000				
29	4k Display 55inch	Nos	2				
	Total						

BILL OF QUANTITIES																						
PROJECT :NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU																						
LOCATION: BENGALURU																						
DESCRIPTION : ELECTRICAL WORKS																						
SUBJECT : LIGHTING																						
Sl.NO	Legend	Description	Image	Location	CCT	Body Colour	Unit	Quantity											Rate		Amount	
								LGF	GF	1F	2F	3F	4F	5F	TF	Buffer	Total	Supply		Supply		
		Lights to be with 1.2-1.5mt cable																				
1		Supply and installation of 15W 900mm length,51mm width, 70mm hieght, High efficiency long life Linear suspended luminaire with white powder coated finish extruded aluminium housing.Microprismatic Diffuser, UGR<19. LED driver duly wired up to terminal block for easy installation and long service. Luminous efficacy not less than 120lm/W. CRI>80, IP20, Ambient temp-0 to 45DegC, Driver efficiency>85%, THD<10%, CCT- 4000k, 50,000 hrs @ L70 life, Powerfactor>0.95, Surge protection-2 kV, Multistage Isolated Constant Current-Constant Voltage operated driver with range 150-270V AC and Safety Extra Low Voltage Safe level<60V DC as per IEC standard. Luminaire lumen ≥ 1800lms.electronic driver		Meeting rooms	4000k	White	Nos		10	9	2	2	2	2		2	29					
2		Supply and installation of 18W 1200mm length,51mm width, 70mm hieght, High efficiency long life Linear suspended luminaire with white powder coated finish extruded aluminium housing.Microprismatic Diffuser, UGR<19. LED driver duly wired up to terminal block for easy installation and long service. Luminous efficacy not less than 120lm/W. CRI>80, IP20, Ambient temp-0 to 45DegC, Driver efficiency>85%, THD<10%, CCT- 4000k, 50,000 hrs @ L70 life, Powerfactor>0.95, Surge protection-2 kV, Multistage Isolated Constant Current-Constant Voltage operated driver with range 150-270V AC and Safety Extra Low Voltage Safe level<60V DC as per IEC standard. Luminaire lumen ≥ 2160lms. electronic driver		Meeting rooms, lounge and workstations	4000k	White	Nos	6	10	2	45					2	59					
3		Supply and installation of 28W 1800mm length,51mm width, 70mm hieght, High efficiency long life Linear suspended luminaire with white powder coated finish extruded aluminium housing.Microprismatic Diffuser, UGR<19. LED driver duly wired up to terminal block for easy installation and long service. Luminous efficacy not less than 120lm/W. CRI>80, IP20, Ambient temp-0 to 45DegC, Driver efficiency>85%, THD<10%, CCT- 4000k, 50,000 hrs @ L70 life, Powerfactor>0.95, Surge protection-2 kV, Multistage Isolated Constant Current-Constant Voltage operated driver with range 150-270V AC and Safety Extra Low Voltage Safe level<60V DC as per IEC standard. Luminaire lumen ≥ 3360lms. electronic driver		Meeting rooms and workstations	4000k	White	Nos			4						1	5					
4		Supply and installation of 36W 2400mm length,51mm width, 70mm hieght, High efficiency long life Linear suspended luminaire with white powder coated finish extruded aluminium housing.Microprismatic Diffuser, UGR<19. LED driver duly wired up to terminal block for easy installation and long service. Luminous efficacy not less than 120lm/W. CRI>80, IP20, Ambient temp-0 to 45DegC, Driver efficiency>85%, THD<10%, CCT- 4000k, 50,000 hrs @ L70 life, Powerfactor>0.95, Surge protection-2 kV, Multistage Isolated Constant Current-Constant Voltage operated driver with range 150-270V AC and Safety Extra Low Voltage Safe level<60V DC as per IEC standard. Luminaire lumen ≥ 4320lms. electronic driver		Meeting rooms and workstations	4000k	White	Nos		7	11						1	19					
5		Supply and installation of 20W 100mm dia, 200mm height, LED diffused based Cylindrical Down Light with 85lm/W system efficacy. Luminaire shall be made up of Die Cast powder coated housing. Luminaire shall have Optical Grade shall be provided with clear glass lens with high efficiency & minimum glare to maintain 120 deg beam angle.ANSI rated LEDs. The LED life of 50000 Hrs.CCT of 4000k and CRI of Minimum 80.electronic driver		Cabins,meeting rooms	4000k	White	Nos		32	53	128	114	118	114		5	564					
6		Supply and installation of 20W 100mm dia, 200mm height, LED diffused based Cylindrical Down Light with 85lm/W system efficacy. Luminaire shall be made up of Die Cast powder coated housing. Luminaire shall have Optical Grade shall be provided with clear glass lens with high efficiency & minimum glare to maintain 120 deg beam angle.ANSI rated LEDs. The LED life of 50000 Hrs.CCT of 4000k and CRI of Minimum 80. electronic driver		Corridor,Toilets	4000k	White		50	105	111	109	52	47	47		5	476					
7		Supply and installation of 10W 100mm dia, 200mm height, LED diffused based Cylindrical Down Light with 85lm/W system efficacy. Luminaire shall be made up of Die Cast powder coated housing. Luminaire shall have Optical Grade shall be provided with clear glass lens with high efficiency & minimum glare to maintain 120 deg beam angle.ANSI rated LEDs. The LED life of 50000 Hrs.CCT of 4000k and CRI of Minimum 80. electronic driver		Toilets	4000k	White		13	9	11	12	3	3	3		2	43					
8		Supply and installation of 18W recessed mounted IP40 LED Circular Down lighter luminaire with system lumen output ≥1800 lm. Luminaire shall be made up of die cast aluminium housing with 145 mm dia of cutout. Luminaire shall have Microprismatic Diffuser UGR<19. Luminaire should Have IP rating of IP40 with IK 05 as protection. ANSI rated LEDs with the life of 50000 Hrs. CCT of 4000k and CRI of Minimum 70. electronic driver suitable to operate in input voltage range of 150V to 270V with minimum 2KV surge protection. The driver should have efficiency of ≥85% with Power factor ≥ 0.95 and I THD of ≤ 10% should be integral to the luminaire. electronic driver		Meeting rooms,cabins,moot court	4000k	White			83	64	27						5	179				
9		Supply and installation of 6W recessed mounted IP40 LED Circular Down lighter luminaire with system lumen output ≥600 lm. Luminaire shall be made up of die cast aluminium housing with 145 mm dia of cutout. Luminaire shall have Microprismatic Diffuser UGR<19. Luminaire should Have IP rating of IP40 with IK 05 as protection. ANSI rated LEDs with the life of 50000 Hrs. CCT of 4000k and CRI of Minimum 70. electronic driver suitable to operate in input voltage range of 150V to 270V with minimum 2KV surge protection. The driver should have efficiency of ≥85% with Power factor ≥ 0.95 and I THD of ≤ 10% should be integral to the luminaire. electronic driver		Toilets	4000k	White	Nos		6	5						1	12					

BILL OF QUANTITIES																					
PROJECT :NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU																					
LOCATION: BENGALURU																					
DESCRIPTION : ELECTRICAL WORKS																					
SUBJECT : LIGHTING																					
Sl.NO	Legend	Description	Image	Location	CCT	Body Colour	Unit	Quantity										Rate		Amount	
								LGF	GF	1F	2F	3F	4F	5F	TF	Buffer	Total	Supply		Supply	
10		Supply and installation of IP40, 20W (4 feet) Suspended type conduit Mounted LED Batten with System efficacy of more than 110 lm/W (2200 lumens). The luminaire shall have High Optically Efficient Polycarbonate Diffuser for Uniform illumination and wider light distribution. Life of 50000 Hrs. The LEDs used should be with CCT of 5700 K and CRI of Minimum 80. 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 with 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.		Storage,service rooms	4000k	White	Nos	26	6	9	2	2	2	2		5	28				
11		Supply and installation of 10W Mirror light with LED electronic driver with CCT of 4000k,life of 50000 Hrs. Power factor greater than 0.95		Toilets	4000k	White	Nos	6	9	10	8	3	3	3		2	38				
12		Supply and installation 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 aluminum housing powder coated in dark gray with polycarbonate high transmissivity opal diffuser. Luminaire is with high quality silicon gasket of IP40 and IK10 protection. Life of 50000 burning hours tested at maximum current. The LEDs used shall be with CCT of 5700 K and CRI of minimum 80, 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 with electronic driver. indoor type		Shafts	4000k	White	Nos	7	10	7	6	3	3	3		2	34				
13		Supply and installation 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 aluminum housing powder coated in dark gray with polycarbonate high transmissivity opal diffuser. Luminaire is with high quality silicon gasket of IP65 and IK10 protection. Life of 50000 burning hours tested at maximum current. The LEDs used shall be with CCT of 5700 K and CRI of minimum 80, 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 with electronic driver. out door type		Terrace	4000k	White	Nos					53			33	5	91				
14		Supply and installation of Integral, IP 20, 600mm dia 30W LED Pendant mounted circular Ring fixture. The LED shall be with the life of 50000 Hrs tested at maximum current. The LEDs used should be with CCT of 5700 K and CRI of Minimum 80. LED Driver shall be CRCA constructed, Isolated type, Constant Current topology driver with proper heat sink for heat dissipation suitable to operate in input voltage range of 150V to 270V with 2 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 with electronic driver			4000k	White	Nos			6							6				
15		Supply and installation of 30W, 250mm dia, 290mm hieght LED Hi-power Downlight – Surface type, 133lm/W system efficacy. The LED shall be with the life of 50000 Hrs tested at maximum current. The LEDs used should be with CCT of 5700 K and CRI of Minimum 80 with electronic driver.		Double height area	4000k	White	Nos		33	32						1	66				
16		Supply and installation of 60W, 250mm dia, 290mm hieght LED Hi-power Downlight – Surface type, 133lm/W system efficacy. The LED shall be with the life of 50000 Hrs tested at maximum current. The LEDs used should be with CCT of 5700 K and CRI of Minimum 80 with electronic driver. outdoor type IP 65		Entrance lobby	4000k	White	Nos			12						1	13				
17		Supply and installation of 80W, 250mm dia, 290mm hieght LED Hi-power Downlight – Surface type, 133lm/W system efficacy. The LED shall be with the life of 50000 Hrs tested at maximum current. The LEDs used should be with CCT of 5700 K and CRI of Minimum 80 with electronic driver. outdoor type IP 65		Entrance lobby	4000k	White	Nos										RO				

BILL OF QUANTITIES																					
PROJECT :NATIONAL LAW SCHOOL OF INDIA UNIVERSITY, BENGALURU																					
LOCATION: BENGALURU																					
DESCRIPTION : ELECTRICAL WORKS																					
SUBJECT : LIGHTING																					
Sl.NO	Legend	Description	Image	Location	CCT	Body Colour	Unit	Quantity										Rate		Amount	
								LGF	GF	1F	2F	3F	4F	5F	TF	Buffer	Total	Supply		Supply	
18		Supply and installation of 20W, 120mm dia, 174mm hieght LED surface Downlight – Surface type, 115lm/W system efficacy. The LED shall be with the life of 50000 Hrs tested at maximum current.The LEDs used should be with CCT of 5700 K and CRI of Minimum 80 with electroinic driver.outdoor type IP 65		Terrace pavilion	4000k	Black						17				1	18				
19		Supply and installation of 30W, 350mmx350mmLED square light 115lm/W system efficacy. The LED shall be with the life of 50000 Hrs tested at maximum current.The LEDs used should be with CCT of 5700 K and CRI of Minimum 80 with electroinic driver.outdoor type							39	70	83					2	194				
20		20W, 1200mm length, Up-Down 70% down 30% up deep recessed prismatic diffuser, Extruded Aluminium housing and Die casted endcap duly powder coated White and with black colour as a option, Technology edge with high efficacy LEDs, 65° Beam lens with microstructured antiglare optical lens and the antiglare cover with multiple colour options, UGR<16 for Up-Down variant, Driver is pre-wired up to terminal block on the housing,			4000k	White	Nos										RO				
21		40W, 2400mm length, Up-Down 70% down 30% up deep recessed prismatic diffuser, Extruded Aluminium housing and Die casted endcap duly powder coated White and with black colour as a option, Technology edge with high efficacy LEDs, UGR<16 for Up-Down variant, Driver is pre-wired up to terminal block on the housing,			4000k	White	Nos										RO				
22		20W, 1200mm length, 150mm width techzone light prismatic diffuser, Extruded Aluminium housing and Die casted endcap duly powder coated White and with black colour as a option, Technology edge with high efficacy LEDs, UGR<16 for Up-Down variant, Driver is pre-wired up to terminal block on the housing,			4000k	White	Nos										RO				
23		40W, 2400mm length, 150mm width techzone light prismatic diffuser, Extruded Aluminium housing and Die casted endcap duly powder coated White and with black colour as a option, Technology edge with high efficacy LEDs, UGR<16 for Up-Down variant, Driver is pre-wired up to terminal block on the housing,			4000k	White	Nos										RO				
24		6W mtr Strp light with 4000k			4000k	White	Mtrs									20	20				
25		PIR motion sensor		toilets and cabins				11	17	26	36	30	29	30		2	170				
26		10w Foot lights with 4000k		Staircase													RO				
27		20W string lights with 4000k		Entrance area					8								8				
Total								119	384	442	458	279	207	204	33	65	2072	0	0	0	0