

<b>CONSTRUCTION OF NEW OP BLOCK AND WARD BUILDING FOR INSTITUTE OF MENTAL HEALTH &amp; NEURO SCIENCES (IMHANS)- PHASE II AT MEDICAL COLLEGE, KOZHIKODE</b>					
<b>PART II -ELECTRICAL WORKS</b>					
SL.No.	Description of item	Unit	Qty	Rate ( Rs) in figures and words	Amount in Rs
<b>A. H.T CABLE LAYING</b>					
1	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 11 KV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc as required.				
1.1	Above 120 sq. mm and upto 400 sq. mm	Rm	40		
2	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 11 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.				
2.1	Above 120 sq. mm and upto 400 sq. mm	Rm	20		
3	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 11 KV grade of following size in the existing masonry open duct as required.				
3.1	Above 120 sq. mm and upto 400 sq. mm	Rm	50		
<b>B. HV CABLE END TERMINATION</b>					
4	Supplying and making indoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of 3 core, XLPE aluminium conductor cable of 11 KV grade as required :				
4.1	300 sq. mm	Each	1		
5	Supplying and making outdoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of 3 core, XLPE aluminium conductor cable of 11 KV grade as required :				

Sl.No.	Description of item	Unit	Qty	Rate ( Rs) in figures and words	Amount in Rs
5.1	300 sq. mm	Each	1		
<b>C. LT CABLE LAYING &amp; END TERMINATION</b>					
6	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc as required.				
6.1	Upto 35 sqmm	Rm	100		
6.2	Above 35 sq. mm and upto 95 sq. mm	Rm	50		
6.3	Above 95 sq. mm and upto 185 sq. mm	Rm	50		
6.4	Above 185 sq. mm and upto 400 sq. mm	Rm	50		
7	Laying of one number additional PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size direct in ground in the same trench in one tier horizontal formation including excavation, sand cushioning, protective covering and refilling the trench etc as required.				
7.1	Above 35 sq. mm and upto 95 sq. mm	Rm	30		
7.2	Above 95 sq. mm and upto 185 sq. mm	Rm	30		
7.3	Above 185 sq. mm and upto 400 sq. mm	Rm	25		
8	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing masonry open duct as required.				

Sl.No.	Description of item	Unit	Qty	Rate ( Rs) in figures and words	Amount in Rs
8.1	Above 35 sq. mm and upto 95 sq. mm	Rm	30		
8.2	Above 95 sq. mm and upto 185 sq. mm	Rm	20		
8.3	Above 185 sq. mm and upto 400 sq. mm	Rm	100		
9	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on wall surface as required.				
9.1	Upto 35 sq. mm (clamped with 1mm thick saddle)	Rm	75		
9.2	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)	Rm	80		
9.3	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)	Rm	10		
9.4	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)	Rm	60		
10	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on cable tray as required.				
10.1	Upto 35 sq. mm (clamped with 1mm thick saddle)	Rm	75		
10.2	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)	Rm	50		

Sl.No.	Description of item	Unit	Qty	Rate ( Rs) in figures and words	Amount in Rs
10.3	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)	Rm	10		
10.4	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)	Rm	60		
11	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.	each	36		
12	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.				
12.1	3.5 C x 400 sqmm	each	2		
12.2	3.5 C x 300 sqmm	each	4		
12.3	3.5 C x 95 sqmm	each	4		
12.4	3.5 C x 70 sqmm	each	6		
12.5	4 C x 16 sqmm	each	6		
<b>D. EARTHING</b>					
13	Earthing with G.I. earth pipe 4.5 metre long, 40 mm dia including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. with charcoal/ coke and salt as required.	Set	14		

Sl.No.	Description of item	Unit	Qty	Rate ( Rs) in figures and words	Amount in Rs
14	Earthing with G.I. earth plate 600 mm X 600 mm X 6 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	Set	10		
15	Supplying and laying 6 SWG G.I. wire at 0.50 metre below ground level for conductor earth electrode, including connection/ termination with GI thimble etc. as required.	Rm	350		
16	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	Rm	40		
17	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	Rm	20		
18	Providing and fixing 25 mm X 5 mm copper strip in 40 mm dia G.I. pipe from earth electrode including connection with brass nut, bolt, spring, washer excavation and re-filling etc. as required.	Rm	200		
19	Providing and fixing 25 mm X 5 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required.	Rm	150		
20	Providing and laying earth connection from earth electrode with 6 SWG dia G.I. Wire in 15 mm dia G.I. pipe from earth electrode including connection with G.I. thimble excavation and re-filling as required.	Rm	200		
21	Providing and laying earth connection from earth electrode with 4.00 mm dia copper wire in 15 mm dia G.I. pipe from earth electrode including connection with copper thimble excavation and re-filling as required.	Rm	180		
22	Providing and fixing 25 mm X 5 mm copper strip on surface or in recess for connections etc. as required.	Rm	150		

Sl.No.	Description of item	Unit	Qty	Rate ( Rs) in figures and words	Amount in Rs
23	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	Rm	150		
24	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing as required.	Rm	180		
25	Providing and fixing 4.00 mm dia copper wire on surface or in recess for loop earthing as required.	Rm	350		
<b>E. LIGHTNING PROTECTION</b>					
26	Providing and fixing of lightning conductor finial, made of 25 mm dia 300 mm long, copper tube, having single prong at top, with 85 mm dia 3 mm thick copper base plate including holes etc. complete as required.	Each	24		
27	Providing and fixing G.I. tape 20 mm X 3 mm thick on parapet or surface of wall for lightning conductor complete as required.(For horizontal run)	Rm	500		
28	Providing and fixing G.I. tape 20 mm X 3 mm thick on parapet or surface of wall for lightning conductor complete as required.(For vertical run)	Rm	300		
29	Providing and fixing testing joint, made of 20 mm X 3 mm thick G.I. strip, 125 mm long, with 4 nos. of G.I. bolts, nuts, chuck nuts and spring washers etc. complete as required.	Each	12		
30	Providing and laying G.I. tape 32 mm X 6 mm from earth electrode directly in ground as required.	Rm	150		
<b>F. CABLE TRAYS</b>					
31	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 from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.				
31.1	100 mm width X 50 mm depth X 1.6 mm thickness	Rm	350		

Sl.No.	Description of item	Unit	Qty	Rate ( Rs) in figures and words	Amount in Rs
31.2	300 mm width X 50 mm depth X 1.6 mm thickness	Rm	350		
32	Supplying and installing following size of perforated pre-painted M.S. cable trays bends with perforation not more than 17.5%,, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.				
32.1	100 mm width X 50 mm depth X 1.6 mm thickness	Each	120		
32.2	300 mm width X 50 mm depth X 1.6 mm thickness	Each	100		
33	Providing and fixing M.V. danger notice plate of 200 mm X 150 mm, made of mild steel, at least 2 mm thick, and vitreous enameled white on both sides, and with inscription in single red colour on front side as required.	Each	10		
34	Providing and fixing H.T. danger notice plate of 250 mm X 200 mm, made of mild steel, at least 2 mm thick, and vitreous enameled white on both sides, and with inscription in single red colour on front side as required.	Each	10		
35	Providing, laying and fixing following dia G.I. pipe (medium class) in ground complete with G.I. fittings including trenching (75 cm deep)and re-filling etc as required				
35.1	100 mm dia	Rm	50		
36	Providing, laying and fixing following dia RCC pipe NP2 class (light duty) in ground complete with RCC collars, jointing with cement mortar 1:2 (1 cement : 2 fine sand) including trenching (75 cm deep) and refilling etc as required.				
36.1	150 mm dia	Rm	80		
36.2	300 mm dia	Rm	120		

Sl.No.	Description of item	Unit	Qty	Rate ( Rs) in figures and words	Amount in Rs
<b>G. 11kV DP STRUCTURE</b>					
37	Supply, fabrication, erection, testing & commissioning of 11 KV DP structure using 200 x 100 mm ISMB for poles and 100 x 50 mm cross channel with ISMC for supporting structure for 11kV components, 11 KV pin, disc and stay insulators, supports, jumpers /interconnecting conductors with 0'SWG Cu, 25x3mm braided copper earthing for non current moving part like handle of AB switch etc. The item includes erection of DP structure on suitable concrete foundation and painting with one coat of metal primer after fabrication and two coats of aluminium enamel paint after erection complete and consists of the following.				
	11KV,400A single brake,TP, gang operated AB switch with operating handle & locking mechanism - 1 set				
	11 KV Lighting Arrestors - 1 set				
	11 KV Drop out fuses - 1 set				
	The DP structure shall be with all necessary accessories for connecting 11kV cable. The 11kV DP structure shall be done as per the requirement of statutory authority (KSEB, Electrical inspectorate).	Job	1		
38	Supply,fabrication, erection, testing & commissioning of 11 KV DP structure using 200 x 100 mm of ISMB for poles and 100 x 50 mm cross channel with ISMC for supporting structure for 11kV components, 11 KV pin, disc and stay insulators, supports, jumpers /interconnecting conductors with 0'SWG Cu, 25x3mm braided copper earthing for non current moving part like handle of AB switch etc. The item includes erection of DP structure on suitable concrete foundation and painting with one coat of metal primer after fabrication and two coats of aluminium paint after erection complete and consists of the following.				
	11 KV,400A single brake,TP, gang operated AB switch with operating handle & locking mechanism - 1 set				
	11 KV Lighting Arrestors - 1 set				
	11 KV Drop out fuses - 1 set				
	11kV outdoor type CT/PT unit with suitable CT as per KSEB, class 0.5, 15VA CT & 11kV/110V class 0.5 100VA PT - 1set.				
	3 phase 3 wire class 0.5, TOD meter in a suitable weather proof sheet steel enclosure in 600mm plinth including Test terminal block, control fuses & 10C 2.5sqmm armoured copper cable between CT/PT unit & TOD meter - 1 set. (The work shall be as per state electricity board norms)				

Sl.No.	Description of item	Unit	Qty	Rate ( Rs) in figures and words	Amount in Rs
	The consumers DP structure shall be braced with state electricity board DP structure if required & interconnection shall be done with 0 SWG Cu wire.				
	The 11kV DP structure shall be done as per the requirement of statutory authority.	Job	1		
39	Supplying and filling the substation yard with 40 mm size blue jelly of 150 mm thick including cost and conveyance of all materials, labour charges etc. complete.	Cum	10		
<b>H. UNITISED SUBSTATION</b>					
40	Supply, installation, testing and commissioning of Indoor Unitised substation comprising of 500 KVA, 11000 / 433 V, 3 phase AN cooled, vector group Dyn11, Dry type, copper wound, class F insulated Cast Resin transformer with off load tap change having tapping range of $\pm 5\%$ in steps of 2.5%, provided with LV cable box suitable for terminating 3 runs of 3.5 x 400 Sq mm AYFY XLPE cable. The HV terminals of the Transformer connected to 11kV, 630A, 350 MVA Load Break Switch switch with HT fuse, resin cast CT/PT units, provision for TOD Meter for HT metering, ammeter, voltmeter, epoxy encapsuled copper bus bar. 1 set OC & EF relay for the protection of the transformer shall be provided. Earth switch shall be provided with front operated spring charged mechanism.				
	The HV cable box shall be suitable for terminating 11kV, 3 core 300 sq mm XLPE cable , along with all standard accessories as per IS 11171 and in conformity with all required standards . Neutral CT of 150/5A, 5P10, 15VA shall be provided on the transformer neutral terminal with low set earth fault relay and its control cabling in the main LT panel. The housing of the USS shall be made up of 2 mm thick CRCA sheet. Door interlock to prevent access to live terminal of HT breaker shall be provided. The enclosure shall be compartmentalised. The enclosure shall also house 1 no. emergency trip push button.	Job	1		
<b>I. HT CABLE</b>					
41	Supply of 11kV, 3C 300sqmm (E) grade XLPE insulated, PVC sheathed compact circular armoured aluminium conductor HT power cable, insulation screened with extruded semi conducting compound in combination with copper tape suitable for 11kV earthed system confirming to relevant standard.	Rm	200		
<b>J. DG SET</b>					

Sl.No.	Description of item	Unit	Qty	Rate ( Rs) in figures and words	Amount in Rs
42	Supply, Installation, Testing and Commissioning of 320 KVA, silent type, water cooled, radiator type, four stroke, electric start D.G Set with acoustic enclosure and standard control panel with 500A, TPN, thermal magnetic MCCB, ammeter, voltmeter, indication lamp etc. The engine shall be capable of taking 10% overload for one hour after 12 hours of continuous operation. The DG shall be suitable for AMF operation. The alternator shall be brushless, self excited, self regulated, SPDPE enclosure, class F/H insulation, suitable for continuous operation at 1500 rpm, generating 415 V +/- 5% at 0.8 p.f, 50Hz, 0.85 load factor, 3 phase,				
	Both Engine and Alternator shall be mounted on common channel iron base frame, and with standard accessories such as antivibration pad, lead acid batteries (as specified by engine manufacturer) and engine driven battery charger along with leads, battery stand, fuel piping from fuel tank to Engine, electronic governor, Residential silencer, suitable size cable termination box etc as required. Rate shall be inclusive of all lift, lead charges. The work should be as per Electrical Inspectorate / Pollution control board norms.	Job	1		
43	Supply, Installation, Testing and Commissioning of 82.5 KVA, silent type, water cooled, radiator type, four stroke, electric start D.G Set with acoustic enclosure and standard control panel with 160A, TPN, thermal magnetic MCCB, ammeter, voltmeter, indication lamp etc. The engine shall be capable of taking 10% overload for one hour after 12 hours of continuous operation. The DG shall be suitable for AMF operation. The alternator shall be brushless, self excited, self regulated, SPDPE enclosure, class F/H insulation, suitable for continuous operation at 1500 rpm, generating 415 V +/- 5% at 0.8 p.f, 50Hz, 0.85 load factor, 3 phase, 4 wire system generally conforming to BS: 2613 & IS: 4722. The neutral of the DG set shall be provided with low set earth fault relay using 25/5A 5P10 10VA CT in the neutral earthing conductor .				
	Both Engine and Alternator shall be mounted on common channel iron base frame, and with standard accessories such as antivibration pad, lead acid batteries (as specified by engine manufacturer) and engine driven battery charger along with leads, battery stand, fuel piping from fuel tank to Engine, electronic governor, Residential silencer, suitable size cable termination box etc as required. Rate shall be inclusive of all lift, lead charges. The work should be as per Electrical Inspectorate / Pollution control board norms.	Job	1		

Sl.No.	Description of item	Unit	Qty	Rate ( Rs) in figures and words	Amount in Rs
44	Supply & installation of exhaust gas piping of suitable diameter for 320kVA DG set as per manufactures standard welded black MS, B class pipe confirming to IS:3589 cut to required lengths and installed with necessary bends, supports and clamps, anti- vibration mountings, insulation of exhaust system with mineral wool / Rockwool, 50mm thick wire mesh & aluminum cladding etc as required.	Rm	30		
45	Supply & installation of exhaust gas piping of suitable diameter for 82.5kVA DG set as per manufactures standard welded black MS, B class pipe confirming to IS:3589 cut to required lengths and installed with necessary bends, supports and clamps, anti- vibration mountings, insulation of exhaust system with mineral wool / Rockwool, 50mm thick wire mesh & aluminum cladding etc as required.	Rm	20		
<b>D. LT CABLE</b>					
46	Supply of following size 1.1 KV grade XLPE insulated, PVC sheathed, armoured Aluminium conductor power cable conforming to IS 7098 (Part 1) amended upto date.				
46.1	3.5 C x 400 sqmm	Rm	125		
46.2	3.5 C x 300 sqmm	Rm	150		
46.3	3.5 C x 95 sqmm	Rm	120		
46.4	3.5 C x 70 sqmm	Rm	120		
46.5	4 C x 16 sqmm	Rm	20		
47	Supply of following size 1.1 KV grade XLPE insulated, PVC sheathed, armoured copper conductor power cable conforming to IS amended upto date.				
47.1	3 x 2.5 sqmm	Rm	200		

Sl.No.	Description of item	Unit	Qty	Rate ( Rs) in figures and words	Amount in Rs
48	Supplying and making end termination with brass compression gland and copper lugs for following size of PVC insulated and PVC sheathed / XLPE copper conductor cable of 1.1 KV grade as required.				
48.1	3 x 2.5 sqmm	each	6		
<b>E. EXTERNAL LIGHTING, LANDSCAPE LIGHTING</b>					
49	Supply, installation, testing & commissioning of single arm LED street light with 1 no 1x21W LED light fixture powered with 1 no solar PV module of 100Wp, battery of Lead Acid tubular built on the bottom of pole, 3.5 m height 4mm thick octagonal pole, foundation bolt, arm, base plate, all required accessories etc. The pole shall be galvanised type. The item includes erection of pole with required excavation, concreting, backfilling etc as required. (Philips BRP402 or Wipro LR20-048-XXX-WH-XX) or equivalent	each	20		
50	Supply and installation of 1x 70W HPSV Integral Post Top lantern with amorphous cover complete with 70W lamp, control gear in dust, moisture proof, die-cast aluminium housing similar to Philips HPS112 or Equi. including 4.5 M long, 40 mm dia G.I.Pipe fixed in the ground with suitable pedestal, FRP terminal Box with Loop-in-Loop out Terminals, 2A, SP MCB with internal connection complete along with civil works & all accessories.	each	20		
51	Supply and installation of 1x 70 W HPSV Integral Gate light fittings / Post Top lantern with iccube cover complete with 70W. lamp, control gear. In dust, moisture proof in die cast aluminium housing similar to Philips HPS 110 or Equi. including suitable 40 mm dia G.I.Pipe on wall /gate complete.	Nos	4		

Sl.No.	Description of item	Unit	Qty	Rate ( Rs) in figures and words	Amount in Rs
52	Supply and fixing of mini bollards lights with all required accessories including 1x18W CFL lamp etc as required. Philips:FGC 203 I x PLET18 W or equivalent.	each	20		
<b>F. SAFETY EQUIPMENTS</b>					
53	Supply and providing 9 Litre capacity GI Fire Bucket painted in post office red with primer coat of red oxide and written with white paint 'FIRE' mounted on MS angle frame work/ wall bracket filled with fine sand, painting the bracket/ floor stand including making good the damages, colour washing etc. as required.	each	2		
54	Supply and providing 6 mm thick & 1 m wide electrical grade chequered type rubber mat to withstand 3.3 KV dielectric strength conforming to IS 5429/ 1969.	Rm	30		
55	Supply and providing 12 mm thick & 1 m wide electrical grade chequered type rubber mat to withstand 15 KV dielectric strength conforming to IS 5429/ 1969.	Rm	10		
56	Supply and providing First Aid Chart duly framed and placed in a conspicuous location for clear vision.	Each	2		
57	Supply of 15" long rubber Hand gloves 15KV grade of approved make	Pair	2		
58	Supply and fixing single line schematic diagrams of A1 size on suitable aluminium sheet including lamination etc as required complete on wall.	Each	2		
59	Fabrication, supply and installation of 6mm thick MS checkered plate with suitable size angle frame work, fixing, painting with 2 coat of primer & 2 coat of enamel paint for fire proof partition between floors in the electrical ducts and covering cable trench etc as required	kg	1400		
<b>G. WATER PUMP &amp; SOLAR WATER HEATER</b>					
60	Supply, erection, testing and commissioning of 5 HP, TEFC, 3 phase, 415 V, 50 Hz, monoblock centrifugal pump with SS impeller, IP54, with DOL starter having overload, single phase, under, over voltage protection, suitable for suction head 3 m and delivery head 12 m with foundation bolt and all required accessories. Make: Kirloskar / Crompton Greaves / V guard.	Each	2		

Sl.No.	Description of item	Unit	Qty	Rate ( Rs) in figures and words	Amount in Rs
61	Supply, installation, testing & commissioning of 1000 LPD SSAL Solar water Heater system using Evacuated tube collector having vertical header & vertical tank, with solar panel, hot water storage tank with supporting brackets etc complete - with back up heater. The solar water heater shall consist of the following:				
	Capacity -1000LPD, No of Tubes- 120,Operating Pressure- Max-0.4 Kg/cm2, Type of Thermal Insulation- Polyurethane Form (PUF), Absorber Coating- Al-N-Al. Inner Tank: Material-Stainless Steel 304 L Grade, 2B Finish, Outer Shell: Material- Aluminium Stucco/ Mirror finish Sheet. Support: Material-Mild steel with black powder coating, Hardware- 304 Grade SS. Reflector Type- Aluminium with mild steel frame, Frame is Black Powder coated. Electrical back up provision with nichrome filament in suitable size BSP brass adaptor. (ISI with Automatic Temperature Controller) Uniform out put on continuous usage.Inlet and outlet provisions.Fitted with sacrificial anode. Necessary interconnecting piping between panel to storage tank etc. Working pressure Max 0.4 kg/cm2 Inter connecting bolts and nuts shall be of stainless steel. System Capacity : 1000 LPD , System type : Non Pressurized system Operating pressure : 0.4 kg/sq.cm, System Output Temperature :60 deg.C No. of Collectors, Size: As per system requirement. Frame Corners : Sealed from inside with silicone sealant Make: V-Guard, Hykon, Tata BP	Job	1		
	<b>Grand Total Amount in Rs</b>				