CO-OPERATIVE ACADEMY OF PROFESSIONAL EDUCATION (CAPE)
1st floor, COBANK Towers, Vikas Bhavan P.O.,Trivandrum – 695 033
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TENDER DOCUMENT

Conversion of LT to HT Electric connection in the College of Engineering, Aranmula

CONTRACTOR **DIRECTOR**

CONTENTS

CONTRACTOR **DIRECTOR**

NOTICE INVITING TENDER AND EXECUTION OF WORK

Tender No. W-09/2015-16/CAPE dated 17.02.2016

Sealed competitive tenders are invited by the undersigned from financially sound and well experienced valid Registered 'A' class Electrical contractors/firms for the Electrification work prescribed below up to 1.00 pm on 24.02.2016. The tender will be opened on the same day at 3.00pm. Bidders shall submit the registration fees and EMD along with the Tender in the form of DD drawn in favour of Director, CAPE payable at Thiruvananthapuram.

1	Name of Work	:	Conversion of LT to HT Electric Connection in the College of Engineering, Aranmula
2	Estimate PAC	:	Rs.22,000,00/-
3	Nature of work	:	HT
4	Time of completion	:	6 months
5	Cost of Tender Documents	:	Rs.2700/- including VAT
6	EMD	:	Rs. 50,000/-
7	Issue of tender documents	:	To be downloaded from the website www.capekerala.org
8	Last date and time of submission of tender	:	24.02.2016 up to 1.00 PM –off line (no online submission)
9	Date and Time of opening of Tender	:	24.02.2016 at 3.00PM

The details of the work, drawings, tender conditions and documents can be downloaded from the website www.capekerala.org from 24.02.2016. For any further details or clarification, the Assistant Engineer, CAPE Head Quarters may be contacted. The Director reserves the right to reject any or all the tenders without assigning any reason therefor and his decision is final and binding.

DIRECTOR

CONTRACTOR **DIRECTOR**

Co-operative Academy of Professional Education

Tender No.W-09/2015-16/CAPE dated 17.02.2016

Sealed Tenders are invited from reputed financially sound Class 'A' Electrical contractors having valid license for carrying out all medium voltage Installation work issued by the Kerala State Electrical Licensing Board for carrying out the work work of Conversion from LT to HT Electric connection with approved materials conforming to BIS standards and other Statutory Rules and Regulations at Collage of Engineering, Aranmula, as per the detailed specifications covered in the schedule attached herewith

Offers in sealed cover superscribing 'Tender for Conversion from LT to HT Electric Connection at College of Engineering, Aranmula' shall be sent so as to reach the office of the undersigned on or before13.00 Hrs on 24.02.2016

The offer should contain an EMD of Rs. 50,000/- (2.5% of cost) and registration cost of Rs. 2700/- by way of DD from SBT in favor of the Director CAPE payable at Trivandrum and Preliminary Agreement in Rs.200/- Kerala Stamp paper.

The tender shall be opened at 15.00. hours on 24.02.2016
The probable amount of the work is Rs. 22,000,00/-

The Director,
CO-OPERATIVE ACADEMY OF
PROFESSIONAL EDUCATION (CAPE)
1st floor, COBANK Towers, Vikas Bhavan P.O.,Trivandrum

CONTRACTOR **DIRECTOR**

Conversion of LT to HT Electric connection in the College of Engineering, Aranmula

Work Consist of providing 400 KVA USS with dry type Transformer, M.V. Switch Boards, APFC Panel, allied cabling etc as per details in the tender schedule. The work is proposed to be executed on contract basis as per general tender rules of CAPE. Those interested in undertaking the work shall be in possession of Contract License of appropriate class, shall have sufficient financial capability and experienced in executing similar works. If called for performance certificates regarding past works shall be produced. Contractor shall be in possession of the required number of qualified, experienced and skilled man power and equipments for carrying out the works in good quality and workmanship. Work should be completed within specified period without any excuse. The schedule of works accompanying this document shows only the approximate quantities which are liable for variation by deletion or addition at the discretion of the client.

The existing DG Set (125kVA) is now connected to a MSB via a 4 Pole COS where KSEB supply is received from the meter cubicle near the road side by means of a U/G Cable. The COS has to be put in DG position permanently and the handle removed and placed inside the COS after disconnecting & insulating KSEB side. All overhead runs of cable shall be through ladder type M.S trays. The cables should be tied to the trays with black colored nylon cable ties and the loose tips of ties to be cut and removed. Tray section should be bonded between and then earthed. Wall / floor trays to be fixed with nylon spacer 12 thick & 32mm dia using GI Anchor Bolt. Trays are to be painted with metal primer and 2 over coats of enamel paint of colour as directed.

Transformer is to be erected within the building in the place marked in the drawing. There is a plinth of dimension 4x1.5m and ht. 50cm inside the courtyard. Panels also are to be installed as per the positions in the drawing. As trenches are not possible inside, cables shall be entered through the top of the panels. Loose lengths are to be accommodated inside the panels in U-shape (ie, cable that is to be connected shall go to bottom of cubicle and bent in U shape, the core will go up o the switch where it is to be connected). Civil works are not included in the scope of the works. But any trenching and making pits for the earth electrodes etc shall be the responsibility of the Contractor. The Contactor will also get the soil test done through Electrical Inspectorate for deciding the number of pits.

D.P structure – Before erection the structure pcs have to be painted properly by providing 1 coat of primer and 2 over coats of good quality Al. paint –sprayed to uniform thickness.

Labelling: All Panels and switches etc shall be properly labelled with machine printed labels on 4mm thick acrylic plate in neat and readable size. Cables have to be provided durable labels, tied to cable at both ends with nylon ties.

O & M manuals: These are life time records to be prepared by contractor after completing the work. It shall comprise all approved drawing, catalogues of equipments ,warranty cards and operating instructions.

Contractor shall ensure safe custody of all items until they are handed over to client and their protection from weather, fire etc.

CONTRACTOR **DIRECTOR**

The incoming conductors from KSEB is expected to be of the O.H. type. All necessary assistance to KSEB has to be rendered by the contractor by way of manpower/equipments for installing the incoming conductor and effecting supply.
Installation shall be guaranteed for a period of 1 year from the date of handing over for trouble free operation. Any defect that arises during the guarantee period shall be rectified by the contractor within 24 hours of intimation of breakdown.
Electricity & Water :- Can be availed from site with permission of college authorities.

Specification of Transformer, HT Switch Gear & Material Brands

Equipment Details:
A. LBS Panel 11 KV, 630A, 350 MVA, 3 Phase, 50Hz, manually operated, with fuse trip mechanism, impulse withstand voltage 28kV, earth switch with ON/OFF indicators and proper inter locks, control wiring with MCB's, space heater with ON/OFF switch & thermostat - 1 no, 5A SP plug socket, cubicle lamp with switch, Al. bus bar 400A, control wiring complete suitably terminated in a terminal block.
Provision for TOD Meter and provided with
1) 11kV/110V, 0.5, 100VA fixed type PT with protective devices conforming to KSEB's standards.
2) C.T.'s epoxy resin cast */5A Class 0.5 S, 15VA. (* ratio to be confirmed later)
3) Test terminal block & HRC control fuse, HT HRC fuse 40A
4) Trip P.B, shunt trip coil 230V ac
5) Provision for fixing TOD Meter

B. Transformer : Cast Resin type conforming to IS 2026/77 & 11171/85
Winding, electrolyte copper, double wound, Vector group Dyn 11 with off load tap changer (+-5% variation in steps of 2.5%). Transformer shall have digital thermometer with contact for alarm & tripping, with extra potential free contact for external connection.
Rating : 11KV/433V, 400kVA, 50c/s, 3Phase AN Cooling.
Lightning impulse voltage 75 kV peak
Power frequency withstand voltage
HV Side: - 28KV
LV Side: - 3KV
Any other accessories required for compliance with KSEB & Electrical Inspectorate regulation shall be provided.

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APPROVED MATERIAL BRANDS

11Kv/433v USS with CRT Transformer	-	Intrans Electro Components Pvt Ltd, Unipower, Megawin
M.V.Panel	-	manufactured by reputed manufacturers (subject to prior approval of consultants)
Armounred Cables	-	1.1kV grade Al.Conductor, PVC insulated, sheathed and armoured to IS 1554 part 1, meter marked. Finolex, Havells. 11kV Cables to IS 7098 (part-2) with Al. conductor, XLPE PVC sheathed and armoured, meter marked, Fiolex and Havells
Cable Glands	-	Brass nickel plated Hex, Dowell, Ace, Kaycee
Lightning Arrestor	-	Shreem or equivalent with IS
11kV Cable Termination	-	Reychen, M-Seal
Energy Meters	-	L&T

GENERAL SPECIFICATION FOR FABRICATION & SUPPLY OF MV SWITCH BOARDS

General

System Voltage	: 415 Volts, 3 Phase 4Wire
Voltage Grade	: 1100 Volts rms
HV Withstand capacity	: 2.5 kVrms for 1 minute
Short circuit withstand capacity	: 25 KA for 1 second
Ingress Protection of Enclosure	: IP 54

Relevant Indian standards to be followed :

IS 8623	: Factory built assemblies
IS 2147	: Protection for enclosures
IS 4237	: Creepage distances

CONTRACTOR **DIRECTOR**

IS 5082	: Wrought Aluminium for Electrical purposes
IS 3618 IS 6005	: Phosphating treatment
IS 375 IS 5578	: Arrangement of bus bars

Switch boards shall conform to regulations of Electrical Inspectorate and KSEB

Enclosure for Switch Boards

The enclosure of the Panels shall be made of 2mm. (14 SWG) thick CRCA sheet steel for bus chamber. The door covers etc of 16 SWG (1.6mm) thick used for panel. The enclosure shall be of floor mounting, free standing and self supporting type construction as specified except where mentioned otherwise.
The enclosure shall be so designed and constructed as to prevent the entry of dust, water, insects and vermin. (I.P rating 54)
The enclosure may be of single front type where the access will be only from the front and the back will be completely closed.
Bus bar chambers shall be provided with screwed covers. Cable alleys shall be provided with hinged / bolted doors or covers which shall be closed tight by means of captive screws with moulded Bakelite. All the hinges shall be of concealed type.
The structure of the enclosure shall be strong and rigid and shall not suffer any distortion while transporting, handling or erection. The board shall be stable under all the required conditions of Electric loading and operations. The covers shall be properly stiffened by means of ribs or other stiffeners for strength, wherever required.
Lifting hooks as necessary shall also be provided.
Bolt holes shall be provided in the bottom frame work for foundation bolts. The cubicle shall have Channel base using 75x40 mm channels.

Bus bars

The set of bus bars shall be arranged in horizontal and vertical formations as required.
The main bus bars shall be of high conductivity electrical grade Aluminium extrusions & shall be of the same section through out the length of the board. Their current rating shall be equal to the full rated current of the incoming main breaker/switch.

The maximum current rating allowable for aluminium bus bar is o.8 Amps/Sq.mm & 1.2 Amps/sqmm for copper.

The board shall be provided with triple pole and neutral bus bars as specified.

The cross sectional area of the bus bars and the supports provided for the bus bars shall be capable of withstanding without damage the electromagnetic and thermal effects of minimum short circuit current of 35 KA for 1 second or as specified in standards and statutes.

Bus bars shall be given colour coding. The bus bars shall be insulated through out their length using heat shrinkable sleeves. The bus bar joints where ever not covered with heat shrinkable sleeves shall be wrapped with epoxy masking tape. The bus bars shall be supported using SMC insulators of adequate dimensios.

FRP/SMC sheets shall be used as shrouds and their minimum thickness shall be 3mm. The cutting edge shall be smoothened and shaped.

Only one tap off shall be taken from a single point on the bus bar. The droppers from the bus bars to the switch gear chamber shall be taken through properly sealed 6mm thick FRP/SMC sheet. Only a minimum required opening shall be provided in the bus chamber for taking the interconnection.

Clearances

The minimum clearances between conductors and earthed metal shall be as follows:

Between phases	-	25mm
Between phase & Neutral	-	20mm
Between phase & Earth	-	20mm

Switch Gears

The switch gear components provided shall have adequate Icu, Ics, Icw short-time, short circuit current withstand capacity as per the Electrical Inspectorate standards. The maximum height of switch gear handles from floor level shall be 1.8 meters & minimum height should be 0.60 meters. Switches shall have door inter-lock as necessary.

Cable Entry Box & Cable Alley

The Cable Entry chambers shall be spacious enough to accommodate all the cables to be installed inside it and also to facilitate their proper routing, clamping and termination. Gland Plates shall be detachable at the bottom & top, openable upwards. The gland plates shall be of adequate size to comfortably accommodate all the cable glands that are expected to be installed on it. The glands shall be spaced such that it

will be possible to work on the different cable terminations without any difficulty. The gland plates shall have gaskets.
Power and control cable termination facilities shall be segregated. Segregation facility shall be provided for cables working at different voltage systems.
The cable entry box shall be effectively segregated from all the surrounding compartments housing live parts.

Compartments

Compartment in the MSB shall be segregated from each other, by sheet steel enclosure on all sides with insulated bushes for entry and exit of power and control cabling and interconnections.
No live component shall be mounted on the door of the compartment except those for metering purposes. When live parts are fixed on the door, the door shall be provided with flexible green coloured PVC insulated 4sq.mm flexible copper earth leads.

Cable alley compartments shall be provided with concealed hinged doors.

Surface Treatment and Finishing

The panel shall be finished with epoxy powder coating to thickness 50 microns, after proper derusting and phosphating.

Earthing

The non-current carrying metal parts of the enclosure and components on the board shall be bonded together and connected to the earth bus installed on the outer side of the board. This earth bus shall run across the full length of the board and have a minimum size of 25x3 mm Copper. All hinged covers shall be earthed using 4sq.mm flexible PVC insulated Copper wire of colour Green or green and Yellow. The chasis of the switches and other control gears fixed in the panels should be also double earthed.

REQUIREMENTS OF ELECTRIC PANELS

Free standing, floor mounting, dust and vermin proof, M.V Panel, in sheet steel enclosure having the following configurations and as detailed in general specifications.

I. Panel No.1 MSB, 415V, 50 c/s, 3 Phase, 4 wire

Grid Side

Incomer: MCCB 4P, 630A, 35KA, Isolation duty, microprocessor released, with shunt trip and spreader terminals and inbuilt releases.

Outgoings: MCCB's 3 Pole, 35kV, Isolation duty
a) 250A, 3P with adj. thermal 200-250A – 2 Nos
b) 200A, 3P with adj. thermal 160-200A – 2 Nos
c) 125A, 3P with adj. thermal 63-100A – 4 Nos
d) Dummy chamber for additional 2Nos. of feeders

Bus Bars : Aluminium 3x40x10 mm - Phase
Aluminium 1x40x10 mm - Neutral

Earth Bus : 25x3mm Copper.

Metering : Ammeter analogue type 0-600A 3Nos with tape wound C.T's 600/5A, Class – 1, 15VA
Voltmeter analogue type 0-600V 1No with selector switch with 2A MCBs.
Static Energy meter CT connected, Power factor Meter and LED type Indicating Lamps with MCB protection.

Cable Entry : Top & Bottom entry. Gland plates detachable upwards.

Solar Side

Incomer: 400 A 4 Pole Isolator – 1 No
Ammeter analogue type 0-400A 3Nos with tape wound C.T's 400/5A, Class – 1, 15VA
Voltmeter, analogue type 0-400V 1No. with selector switch with 2A MCBs.
Energy meter, Power factor Meter and LED type Indicating Lamps with MCB protection.

II. Panel No.2: Common Panel (Grid/DG), 415V, 50 c/s3 Phase, 4 wire

CONTRACTOR **DIRECTOR**

Free standing, floor mounting, dust and vermin proof, M.V Panel in sheet steel enclosure having the following configurations

Incomer: 250A, 4 Pole On Load COS, 3 positions

Outgoings: a) 200A, 3P, 35KA MCCB – 1 No
b) 160A, 3P, 35KA MCCB – 2 Nos
c) 125A, 3P, 35KA MCCB – 1 No
d) 63A, 3P, 10KA 'C' curve MCB – 2 Nos
e) 32A, 3P, 10KA 'C' curve MCB – 2 Nos
f) Dummy chamber for additional 2Nos. of feeders

Bus Bars : Aluminium 1x50x6 mm - Phase
Aluminium 1x25x6 mm - Neutral

Metering : Ammeter Analogue type 0-250A – 3 Nos with Cl – 1, 15VA 250/5 CTs
Voltmeter analogue type 0-600V 1No. with selector switch with 2A MCBs.
Indicating Lamps: LED 2 Sets (Grid & DG) and MCB protection.

APFC Panel - *1 No.(As per General specifications of panels and fitted with Automatic Power Factor Correction Relay)*

Incomer: 125A, TPN Isolator – 1 No.

Outgoings: a) 32 A 3 pole 10KA rated 'C" curve, MCB's – 4 Nos.
b) 16 A 3 pole 10KA rated 'C" curve, MCB's – 3 Nos.
c) Blank way - 3 Nos
d) Contactors 3 Pole, 230 V coil, Capacitor duty, double break contractor 32 A – 4 Nos
e) ----- do ----- 16A - 3 Nos

Bus Bars : Al. 25x6 mm phases and Neutral

Metering : Analogue A/M 0-100 A – 3 Nos through CT 100/5A, CL. 1, 15VA
Volt Meter. Powerfactor meter Analogue type 0-600V, 50 c/s with selector switch & MCB protection-1set

Indicator Lamps : LED- 1 set with MCB protection

APFC Relay : Digital 12 steps, with CT protection MCB, interconnection with PVC/Cu Wire etc.

Earthing : 25x3 mm Copper.

CONTRACTOR **DIRECTOR**

Cable entry : Detachable gland plates at top & bottom

Ventilation fan : of suitable size.

Makes for Components: COS – H.P.L Socomec.

MCCB – Siemens, ABB, G.E, L&T, HAVELLS

MCB - ---- do ----

Meters – Rishab, A.E, Meco

C.T's - Resitech / Kapa / Ganga

Selector Switch - C&S, Select

LED lamps - L&T

APFC Relay - C&S, Syntron, Enercon.

Contactors – Telemechanic, L&T, C&S

Isolator – HPL

COS - HPL SOCOMEC,ABB

Capacitor - Shreem, Momaya

Energy Meter - L & T

Copper PVC Wires – Finolex, RR Cables to IS

CONTRACTOR **DIRECTOR**

Terms & Conditions for the Electrification work as per schedule accompanying the tender

1. Only approved make of materials accepted as per list appended shall be used for the work. All other materials not mentioned in the list specifically shall conform to relevant IS standards.

2. M.V. installation shall conform IS. 732.

3. Earthing shall conform IS 3043 / 1988.

4. All wires shall be colour coded as below:
   a) Single phase - Red.
   b) Three phase - Red, Yellow, Blue.
   c) Neutral - Black.
   d) Earth - Green.

5. The final rates for the various items of work and materials if any coming under your scope of supply will be as detailed in the schedule.
6. The work shall be commenced immediately and carried out strictly in accordance with a time schedule prepared by you and approved by our consultants.
7. It shall be the responsibility of the contractor to prepare detailed drawings as per the design and guidelines given by the consultant and to submit the scheme for necessary approval under Rule 63 of IER 1956 from the Electrical Inspectorate. The contractor shall keep close liaison with the Electrical inspectorate and KSEB to expedite formalities like measurement of soil resistivity, scheme approval, power allocation and sanction for energisation.
8. The schedule in general contains almost all the work and the material required for the work. In case any additional work / modification is found necessary during the actual execution of work it shall be carried out only with prior approval of the Consultant / Client and on mutually agreed terms.
9. The client shall bare all expenses towards statutory fees and charges leviable by the Electrical inspectorate and KSEB. Such fees shall be paid by the contractor and the amount

CONTRACTOR **DIRECTOR**

spent by the contractor shall be reimbursed by the client on production of vouchers / receipts.

10. It shall be the responsibility of the contractor to carry out to the satisfaction of the client and consultant all necessary pre-commissioning tests before preparing the completion certificate for submission to the KSEB.

11. The contractor shall comply with the provisions of IER 1956 and Licensing Board Rules in regard to the execution and completion of the work.

12. The work shall be completed in all respects in accordance with the schedule within a period of **Six months** from the date of awarding the work.

13. The contractor shall furnish a guarantee for a period of **one year** from the date of commissioning of the installation, for all the works carried out as per this tender and shall undertake to replace/repair any equipment or materials supplied by them during this period of guarantee free of cost.

14. Any alteration or rectification of works of the existing installations suggested by Electrical Inspectorate shall be treated as extra items.

15. A copy of this shall be signed and returned to the Client as a token of acceptance.

16. The contractor shall obtained scheme approval from Kerala State Electrical Inspectorate before commencing the work.

17. The contractor should sign on all pages of tender documents

18. The successful bidder to whom the work is awarded should furnish 5% of the quoted value towards security deposit in the form of DD from a nationalized bank. It will be released after completion of the guarantee period of one year.

19. Retention of 2.5% of the gross amount of each running bill will be deducted. The retention amount will be released on commissioning of work.

20. The amount towards Earnest Money Deposit, Security Deposit and retention will not carry any interest.

CONTRACTOR **DIRECTOR**

PRICE BID

CONTRACTOR **DIRECTOR**

CONVERSION FROM LT TO HT ELECTRIC CONNECTION IN THE COLLEGE OF ENGINEERING, ARANMULA

Tender Schedule

Sl.No.	Description of Item	Qty.	Unit	Rate	Amount
1	Supply & erection of indoor, 11kV/433V, 3 Ph, Dyn11 dry type (CRT), 400kVA Transformer in sheet steel powder coated enclosure, having off load tap changer for variation +/- 5% in steps of 2.5%, H.V.Side suitable for connection to HTSFU, LV Cable box suitable for 2runs of cables with winding temp.indicator and all other fittings and accessoriesto IS 2026/77 & 11171/85 together with 11kV Load break switch metering panel rated 11kV, 26kA, 630A & Earth switch, CT's ……./5A, 15VA Cl 0.5S, PT 11kV/110V, 100VA Cl 0.5, HT HRC Fuse 40Amps seal off bushing, Shunt Trip coil 230V AC, space heater and thermostat, 400A Al.Bus Bars on support insulators, provisionn for TOD Meter etc complete, conforming to KSEB & Electrical Inspectorate regulations, test & commission. *(* CT ratio furnished later)*	1	No.	10,03,835.00	10,03,835.00
2	Supply & install CT connected TOD Meter of approved brand and conforming to relevant IS and KSEB, Electrical Inspectorates regulation, 3 phase 3wire, IP 51, with unbreakable transperant cover, provision for sealing, anti tamper features, real time and calibrated quartz clockm tested by KSEB	1	No.	24,500.00	24,500.00
3	Fabricate, supply and install MS ladder tray of various dimensions as given in drawing. (See specification)	200	Kg	75.00	15,000.00
4	Supplying and fixing 120/5 resin cast class 5P10VA neutral CT with bar primary 25x6mm copper in a suitable powder				

CONTRACTOR **DIRECTOR**

	coated MS Box or GI box with necessary wiring and earthing of the box	1	No	6,250.00	6,250.00
5	**Cables:** Supply & lay 3c 150sqmm 11kV XLPE cable (armoured) in ready trench and clamp on ladder at DP as specified	35	Mtr	1,684.00	58,940.00
6 a)	Supply and lay the following pieces of LV Cables of specified make 3.5c 95 sq. mm AYFY - clamped to wall and tray (old MSB to new MSB) after dismantling.	44.01	Mtr	600.00	26,406.00
b)	Extend D/G cable 3.5x 150sqmm AYFY from old COS to new COS Panel	30	Mtr	889.00	26,670.00
c)	2 runs of 3.5cx400sqmm AYFY, T/F LV side to MSB (cabls to be clamped to tray with 20x3 fabricated MS saddles	25	Mtr	1,973.00	49,325.00
d)	10 core 2.5sqmm Cu control cable, PVC/ PVC, armored and meter marked and give connections	30	Mtr	502.00	15,060.00
7 a)	**Termination:** Supply, fix and connect outdoor type terminations of specified make kit for 11kV, test and commission 3x150 Sq.mm.	1	No	10,178.00	10,178.00
b)	--do-- indoor type as above	1	No	8,769.00	8,769.00
c)	Termination for 3.5C 95sqmm AYFY cable and make connection, test & commission (double compression nickel plated brass gland) including Cu earth clamp.(*includes CU. Earth clamps for glands*	2	Nos	834.00	1,668.00
d)	--- do --- for 3.5c 150sqmm AYFY cable as above(20x3Cu for earth clamp)[*includes CU. Earth clamps for glands]*	2	Nos	1,107.00	2,214.00
e)	---do--- for 3.5C 400sqmm AYFY cable -- do --[*includes CU. Earth clamps for glands]*	4	Nos	3,053.00	12,212.00
8	**LV Panels:** Fabrication, supply and erection of following panels as per details in specifications, made out of 2mm thich CRCA sheet, rust inhibited, zinc	1	No.	3,36,413.00	3,36,413.00

CONTRACTOR **DIRECTOR**

a)	passivated, phosphated and powder coated of approved colour hinged and earthed from doors with name plates, danger notice board, heavy duty rubber gaskets removable gland plates, aluminium bus bars, copper earth bus etc complete test and commission. (beaker details - see specifications) Main switch Board				
b)	Common Panel	1	No.	1,59,322.00	1,59,322.00
c)	APFC Panel	1	No.	1,75,675.00	1,75,675.00
9 a)	**<u>Earthing:</u>** Supply and erect plate earth conforming to IS 3043 Using CI plate 1200x1200x12mm, watering pipe GI, inspection chamber internal size 450x450x450mm with ISI grade CI Frame and cover etc complete and give lead connection including excavation and back fittings	8	Nos.	10,652.00	85,216.00
b)	Supply and erect pipe earth with 4.5M, 40mm dia, ISI medium class GI Pipe with masonary watering chamber, 30x30x30cm, inside & top properly plastered and provided with IS quality C.I. frame & lid and connect leads, including excavation & back fittings with-out charcoal & salt	3	Nos.	2,537.00	7,611.00
10 a)	Supply and lay the following size of hot dip galvanised GI strip for connecting earth plates to test joints and plate to plate interconnection including fabrication and jointing of strips, bolting to plates, excavation to depth 60cm & back fitting etc complete 40x6mm	111.7	Mtr	239.00	26,290.00
b)	--- do --- 50x6	25	Mtr	291.00	7,275.00
c)	--- do --- 32x6	30	Mtr	196.00	5,880.00
11	Supply and clamping the following size of CU strip on wall / trays using bronze DC clips at 50 cm intervals, making joints after tinning ends Size 25x3mm	50	Mtr.	530.00	26,500.00

CONTRACTOR **DIRECTOR**

12	Supply and fix No.6 Cu. Earth conductor for L.A. & 11kV DP poles and connect to earth pipes	20	M	133.00	2,660.00
13 a)	**<u>11KV DP Structure:</u>** Excavate pit to dimension 75x75x165cm for coloumn foundation - 2 nos, back fill after erecting structures and compact	1.68	Cu.M	458.00	769.44
b)	Muffing in concrete using 20mm metal in 1:3:6 ratio around RSJ to dimensions 30x20x180 cm over flat base dimensions 50x50x15cm plastering coloumn water curing etc complete - 2 nos with all materials	0.29	Cu.M	6,407.00	1,858.03
c)	Supply materials, fabricate, paint and erect 11kV DP structure of Ht. 9M with IS beam 175x85mm as per given drawing	366	Kg	75.00	27,450.00
d)	Supply and fabricate paint and fix cross arms with 65x65x5mm IS angles 2.5m long each 8 Pieces	98	Kg	75.00	7,350.00
e)	Supply fabricate and install ladder tray 20cm wide, 3m long with MS angle 30x30x3mm & flat 20x3 mm at 20cm spacing (tray to be 30cm above ground) including MS clamps for cable	9.8	Kg	75.00	735.00
f)	Supply and fix 11kV AB Switch 3 pole 400A with handle and install accessories over the DP and give connections	1	No	16,500.00	16,500.00
g)	Supply and fix 11kV superior quiality lightining arrestor set and give connections	1	Set	3,600.00	3,600.00
h)	Supply and fix superior quality 11KV,expulsion type DO Fuse,including connections and fuse element	1	Set	8,800.00	8,800.00
i)	Supply and erect on the DP 11kV pin insulator ISI rated	3	Nos.	400.00	1,200.00
14 a)	**<u>Safety Items in Transformer room:</u>** Supply, fix 9 ltr capacity fire bucket with rock sand suitably supported on angle iron stand duly painted.	2	Nos.	156.00	312.00
b)	Supplying & fixing 5kg dry chemical powder type extinguisher	4	Nos.	2,324.00	9,296.00
c)	do --- laminated shock treatment chart	1	No.	1,500.00	1,500.00

CONTRACTOR **DIRECTOR**

d)	do --- laminated schematic drawing	1	No.	1,000.00	1,000.00
e)	Supply of 1 set of 11kV hand gloves of ISI Grade	1	Set	400.00	400.00
f)	Supply and lay electrical safety mat ,synthetic 11KV grade,4mm thick,to IS 15652	2	M^2	3,833.00	7,666.00
g)	do L.V side to IS as above	2	M^2	3,120.00	6,240.00
h)	Supply and fix on wall First Aid Box with medicine	1	No.	204.00	204.00
i)	Supply and fix labels for panels switches,cables etc as specified	1	Job	750.00	750.00
j)	Prepare and submitt O& M manuals in spiral bound file form -2 sets	1	Job	500.00	500.00
k)	Laison with KSEB & E.I office for soil testin ,approvals and connection etc	1	Job	10,000.00	10,000.00
				Total	**22,00,000.00**
(Rupees twenty two lakh only)					

CONTRACTOR **DIRECTOR**

Conversion of LT to HT Electric connection in the College of Engineering, Aranmula

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QUOTED RATE OF THE CONTRACTOR

I/We agree to undertake to execute the work

1. At estimate rate

2. ……% below estimate rate.

3. ……..% above estimate rate.

Note: i) Score out which is not applicable.
ii) The rates may be quoted in **words** and **figures.**

Signature of Contractor

CONTRACTOR **DIRECTOR**