

**INDIAN INSTITUTE OF TECHNOLOGY KANPUR****Tender Notice No. 27/Elect./2019****SCHEDULE OF QUANTITY****Name of Work: Replacement of two existing transformer and LT installed at substation no.1 phase-2 (in buyback of existing transformers and panels).****Name of the Contractor**

S. No	Description of Items	Qty	Unit	Rate in Figures in Rupees	Amount
	Transformer & Panels				
1	Supply ,installation, testing and commissioning distribution Transformer 11 KV/0.433 kV 2000 KVA , complete with following accessories and specifications. E-01				
	Type : Distribution Transformer				
	Cooling Type : ONAN				
	No. of Winding : Two				
	No. of phases : Three				
	No load Voltage Ratio : 11/0.433 kV				
	Vector Group Reference : Dyn 11				
	OTI, WTI & low oil level with marshalling box with alarm and trip contacts.				
	Manual tap changer + 7.5% - 7.5% in steps of 2.5% OCTC.				
	Buchholz relay with alarm and trip contacts and valve on conservator side connection. HV side cable box 1x 3 C x 400 sq.mm. box, LV box for bus duct.	2.00	Nos.		
2	Supply installation testing and commissioning of cubical type LT panel suitable for 415V, 3 phase, 4 wire 50 Hz AC supply system fabricated in compartmentalized (preferable) design from CRCA sheet steel of 2mm thick for frame work and covers. 3mm thick for gland plated i/c cleaning & finishing complete with 7 tank process for powder coating in approved shade, having suitable capacity extensible type FP Aluminium alloy Bus bars of high conductivity. DMC.SMC bus bar supports, with short circuit withstand capacity of 70 KA for 1 sec. bottom base channel of MS section not less than 100mm x 50mm x 5mm thick, fabrication shall be done in transportable sections, entire panel shall have a common earth bar of suitable size at the rear with 2 Nos earth solid connections from main bus bar to switch gears with required 1.5 sq.mm. zero halogen fire retardant low smoke insulated copper conductor s/c cable, cable alleys, cable gland plate in two half.				

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	The panel shall be equipped with relays, timers set of CT's for metering & protection and energy analyser to indicate Current phase, line voltage, frequency, power factor, KWH, KVARH. Provision of over load, short circuit, restricted earth fault, under frequency control cabling and interlocking, suitable cable termination chambers/ bus bars extension and providing indicating lamps of phases for all feeders complete with foundation as per drawing and specifications amended up to date complete. and attached specification E-02				
a	INCOMER				
	2 No's 4000A, TP, EDO,70KA, ACB with micro processor based release for O/C,S/C& E/F protection with LCD display (ABB PR122/P/ LSIG Rc or equivalent.)				
b	BUS COUPLER :				
	1 No.4000 A, FP, EDO,70KA ACB without release.				
c	Bus Bar				
	4000A 415V, 3 phase 4 strip (100% neutral) 50Hz Aluminium alloy bus bar				
d	Out Going :				
i	4 nos. 2000 A, TP, EDO, 50 kA ACB with microprocessor based O/C,S/C,& E/F protection. (ABB PR122/P/ LSIG Rc or equivalent.)				
ii	4 nos. 1250 A, TP, EDO, 50 kA ACB with microprocessor based O/C,S/C,& E/F protection. (ABB PR122/P/ LSIG Rc or equivalent.)				
iii	2 nos. 1000 A, TP, EDO, 50 kA ACB with microprocessor based O/C,S/C,& E/F protection. (ABB PR122/P/ LSIG Rc or equivalent.)				
iv	2 nos. 800 A, TP, EDO, 50 kA ACB with microprocessor based O/C,S/C,& E/F protection. (ABB PR122/P/ LSIG Rc or equivalent.)				
v	4 nos. 630 A, TP, 50 kA, MCCB with Microprocessor based O/C,S/C,&E/F protection with rotary handle &spreader terminals				
vi	6 nos. 400 A, TP, 50 kA, MCCB with Microprocessor based O/C,S/C,&E/F protection with rotary handle &spreader terminals				
vii	4 nos. 250 A, TP, 50 kA, MCCB with Microprocessor based O/C,S/C,&E/F protection with rotary handle &spreader terminals				
viii	4 nos. 100 A, TP, 50 kA, MCCB with Microprocessor based O/C,S/C,&E/F protection with rotary handle &spreader terminals				

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	Note : All ACBs and MCCB's aux. contacts for ON/OFF and trip spare contacts to be wired up to terminal block.	1.00	Set		
3	Capacitor panel : Supplying , installation , testing and commissioning of 2 mm thick CRCA sheet cubical type floor mounted capacitor bank panel as per following details and enclosed specifications E-03 .				
	Capacity : 600 KVAR				
	Incomer : MCCB 1250 A, 3 P, 50 kA with microprocessor based O/C,S/C,& E/F protection. (ABB PR122/P/ LSIG Rc or equivalent.)				
	Out Goings for Banks:				
	For 25 KVAR : MCCB 63 A, 3 P, 36 kA with adjustable O/L, S/C, release & ROH and 63 A TP AC3 duty Power contactor with 2NO+2NC.				
	For 50 KVAR : MCCB 125 A, 3 P, 36 kA with adjustable O/L, S/C, release & ROH and 110 A TP AC3 duty Power contactor with 2NO+2NC.				
	For 75 KVAR : MCCB 200 A, 3 P, 36 kA with adjustable O/L, S/C, release & ROH and 200 A TP AC3 duty Power contactor with 2NO+2NC.				
	For 100 KVAR : MCCB 250 A, 3 P, 36 kA with adjustable O/L, S/C, release & ROH and 250 A TP AC3 duty Power contactor with 2NO+2NC.				
	Banks: 1No. 25 kVAR, 2 No. 50 kVAR, 1 Nos. 75 kVAR,4 Nos. 100 kVAR with MPP heavy duty Capacitors.				
	APFC Relay : 12 stage				
	Metering: Digital Volt and Amp meter, exhaust fan, LED type indicating lamp, controlling system etc.	2.00	Set		
4	Supply installation , testing & commissioning 4000 amp, IP 65, Four Pole aluminium bus duct with MS enclosure, copper flexible connections at both the ends as required complete and enclosed specifications E-04 .	26.00	Mtr.		
	Earthing				
5	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.	6.00	Nos.		
6	Supplying & fixing 32 mm x 6mm thick GI earth strip on surface or in recess for connection etc. as reqd.	200.00	Mtr		

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7	Providing and fixing earth bus of 50 mm X 5 mm copper strip on surface for connections etc. as required.	75.00	Mtr		
8	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	4.00	Nos.		
	HT & LT cable				
9	Supply & laying of one number XLPE steel armoured aluminium power cable of grade 11 KV of size 3 C X 185 Sq.mm. as per following details with tagging at interval of 50 meter.				
a)	Direct in ground including excavation, sand cushioning, protective covering and refilling the trench as reqd.	40.00	Mtr		
b)	In the existing RCC / HUME / STONE WARE / METAL pipe as reqd.	10.00	Mtr		
c)	Direct in the existing masonry open duct as reqd.	25.00	Mtr		
10	Supply & Laying of one number additional PVC insulated XLPE power cable of 11 KV grade of 3 x 185 sq.mm. 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 complete.	40.00	Mtr		
11	Supplying and laying of one no. XLPE power cable of size 3½C x 400 sq.mm. aluminium conductor steel armoured of 1.1kV grade as per following details.				
a)	Direct in ground I/c excavation, sand cushioning, protective covering and refilling the trench etc. as reqd.	20.00	Mtr		
b)	in open duct	60.00	Mtr		
c)	in RCC/ hume/GI pipe	10.00	Mtr		
12	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				
b)	80 mm Dia	50.00	Mtr		
c)	100 mm Dia	10.00	Mtr		
13	Supply & laying of one number XLPE steel armoured copper control cable of grade exceeding 1.1 KV of size 10 x 2.5 Sq.mm. as per following details.				
a)	Direct in ground including excavation, sand cushioning, protective covering and refilling the trench as reqd.	10.00	Mtr		
b)	In the existing RCC / HUME / STONE WARE / METAL pipe as reqd.	10.00	Mtr		

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c)	Direct in the existing masonry open duct as reqd.	70.00	Mtr		
d)	On surface with ms clamps	2.00	Mtr		
14	Supplying and laying Insulating mat "Shock safe" 3.0 mm thick for up to 33.0 kV class C in front of electrical panels, ISI marked as required complete.	12.00	Sq.Mtr.		
15	Supplying & making cable indoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of 3 core XLPE Al. conductor cable of 11kV grade as reqd.				
a)	above 120 sq.mm. up to 240 sq.mm.	4.00	Nos.		
16	S&M end termination with brass compression gland and aluminium lugs etc. complete as reqd. for the following size of PVC/XLPE insulated al conductor cable 1.1kV grade as reqd.				
a)	up to 4 C x 10 sq.mm.	4.00	Nos.		
b)	3½ C x 400 sq.mm.	10.00	Nos.		
c)	10 C x 2.5 sq.mm.	8.00	Nos.		
17	Digging & refilling the cable trench , ramming and making good the same as reqd.	20.00	Mtr.		
18	Lifting removing cable upto 185sq.mm. size from trench/clamps, making role & depositing the same in store I/c cartage.	20.00	Mtr.		
19	Supply & laying of one number XLPE steel armoured copper control cable of grade exceeding 1.1 KV of size 4 x 4.0 Sq.mm. as per following details.				
a)	Direct in ground including excavation, sand cushioning, protective covering and refilling the trench as reqd.	5.00	Mtr.		
b)	In the existing RCC / HUME / STONE WARE / METAL pipe as reqd.	5.00	Mtr.		
c)	Direct in the existing masonry open duct as reqd.	20.00	Mtr.		
	Civil works				
20	Supplying and laying chequered plate in cut pcs of 6mm thick with handle cutting/ welding as required complete.	15.00	Sq. Mtr		
21	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete up to plinth level. Cold twisted bars	25.00	Kg.		
22	Providing 15mm thick cement plaster of mix 1:4 (1 cement : 4 fine sand) at all levels.	50.00	Sqm		

S. No	Description of Items	Qty	Unit	Rate in Figures in Rupees	Amount
23	Providing and laying in position reinforced cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) in foundation of pump, DG set etc. including form work etc. as required (excluding reinforcement).	5.00	cum		
24	Supplying and fixing 'C' Channel of size 100 x 50 mm ISMC in cut sizes i/c cutting/ welding as required complete.	10.00	Mtr.		
25	Providing brick work (in width 225 mm or more) with F.P.S. bricks of class designation 7.5 in cement mortar 1:4 (1 cement : 4 coarse sand) at all levels.	5.00	cum		
26	Excavation for foundation in soft soil including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 metres.	20.00	cum		
27	Centering and shuttering including strutting, propping etc. and removal of form for Foundations, footings, bases of columns, etc. for mass concrete	20.00	Sqm		
	Total (Part-A)				
	Part-B				
1	Discount for taking out existing transformer and panels as and where as basis:				
i	Assessed cost of 1000 kVA transformer	1.00	Nos.		
ii	Assessed cost of 750 kVA transformer	1.00	Nos.		
iii	Assessed cost of LT panel	1.00	Nos.		
iv	Assessed cost of capacitor panel	2.00	Nos.		
	Total (Part-B)				
	Grand Total (Part:A - Part:B)				