ODISHA POWER TRANSMISSION CORPORATION LIMITED

NAME OF THE WORK:-Design, Supply and Installation of 2X160MVA Auto Transformer ,220/132 KV Out Door Type GIS Grid Sub-station at (Gundichapada),Dhenkanal and 2 nos. 132KV Feeder bay extension at existing 132/33KV Dhenkanal grid sub-station for connectivity with Dhenkanal GIS in Odisha State of India under PACKAGE-1 Under Japan International Cooperation Agency (JICA)'s ODA Loan.

Loan Agreement No: [ID-P245] - FB No: [CPC/JICA/ICB/01/18-19]- Reference Identification No: [OPTCL/JICA/PKG-1]

Schedule No. 1. Plant Supplied from Abroad (Sub-station)

NAME OF THE BIDDER

SL. NO.	SUPPLY OF FOLLOWING EQUIPMENTS (As per Technical Specification)	Code[1]	UNIT	Quantity for: Construction of 2x160 MVA Auto Transformer, 220/132 GIS S/S at (Gundichapada) Dhenkanal Out Door type GIS S/S (New)	Unit Price[2]		Total Price[2]
					In Foreign Currency	CIP	
				(1)	*(2)*	*(3)*	*(1) x (3)*
1	**3150A, 50kA for 3s, Double Busbar Circuit Breaker (Circuit breaker shall be E2-C2-M2 class as per IEC 62271-100) arrangement.245kV OUTDOOR GIS EQUIPMENT as per latest IEC standard & type tested equipment as per technical specification, with open future proof & flexible system in line with IEC 61850 & IEC 62271-203.**						

1.1	245kV, 3150A, 50kA for 3 sec (Busbar, CB, Disconnector, Grounding Switch & CT), SF6 gas insulated **Transformer Feeder Bay** Module each comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Motorised Busbar 3 Phase Disconnector (2 Nos), Motorised Disconnector (1 No), Motorised safety Grounding switch (3 Nos), Local Control Cubicle, SF6 gas monitoring system for complete bay, SF6 bus duct termination arrangement (3 Nos), PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete ICT Feeder Bay Module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification(Price of the equipment has been converted from Japanese Yen to INR as per the selling rate on Dt.18.12.2018)	Set	**2**			

1.2	245kV, 3150A, 50kA for 3 sec (Busbar, CB, Disconnector, Grounding switch, CT & PT), SF6 gas insulated **Line Feeder** Bay Module each comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Single phase Line Potential Transformer (4 winding) (3 Nos), Motorised 3 Phase Busbar Disconnector (2 Nos), Motorised safety Grounding switch (2 Nos), Motorised 3 Phase Disconnector with high speed fault making Motorised Grounding switch (1 No), Local Control Cubicle, SF6 gas monitoring system for complete bay, SF6 bus duct termination arrangement (3 Nos), PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete Line Feeder Bay Module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.		Set	**4**			

1.3	245kV, 3150A, 50kA for 3 sec (Busbars, Disconnector, Grounding switch & bus PT), 1 Phase Isolated Bus-PT Bay Module comprisig of SF6 gas insulated metal enclosed busbars each enclosed in bus enclosures running along the length of the switchgear to interconnect each of circuit breaker bay module. Each busbar set shall be complete with Single phase bus Potential Transformer (4 winding) (3 Nos), Motorised 3 Phase Disconnector (1 No) , Motorised Busbar safety Grounding switch (1 No), Local Control Cubicle, SF6 gas monitoring system PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete the bus & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.		Set	**1**			
1.4	245kV, 3150A, 50kA for 3 sec (CB, Disconnector, Grounding switch & CT), SF6 gas insulated **Bus Coupler** Bay Module comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Motorised 3 Phase Disconnector (2 Nos), Motorised safety Grounding switch (2 Nos), Local Control Cubicle, SF6 gas monitoring system, PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete Bus Coupler Bay Module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.		Set	**1**			

1.5	245kV, 3150A, 50 kA, 3 sec, single phase, SF6 gas Insulated Bus Duct outside GIS Bay along with associated Support structure arrangement bends, joints,accessories, & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.		RM	**700**			
1.6	245kV, 3150A, 50kA SF6/Air BUSHING (Bushing shall be of Polymer / composite insulator type and shall be seamless sheath of a silicone rubber compound. The hollow silicone composite insulators shall comply as per IEC 61462 and IEC 62217. The design of the composite insulators shall be tested and verified according to IEC 61462) FOR CONNECTING GIS TO AIS along with support structure.		No.	18			
1.7	Portable Partial Discharge Monitoring System (PDM): 245kV system shall have Portable Partial Discharge Monitoring System (PDM) & shall be capable for measuring PD in charged GIS environment, bandwidth in order of 100MHz–2GHz & provision to select a wide range of intermediate bandwidths and the principle of operation shall be based on UHF principle of detection. The Detection and measurement of PD and bouncing particles having in built large coloured LCD for displaying and storing facility in the instrument for further analysis to locate actual source of PD such as free conducting particles, floating components, voids in spacers, particle on spacer surfaces etc.		Set	**1**			
2	**2000A, 40kA for 3s, Double Busbar Circuit Breaker (Circuit breaker shall be E2-C2-M2 class as per IEC 62271-100) arrangement.** **145kV OUTDOOR GIS EQUIPMENT as per latest IEC standard & type tested equipment as per technical specification, with open future proof & flexible system in line with IEC 61850 & IEC 62271-203.**						

2.1	145kV, 2000A, 40kA for 3 sec (Busbar, CB, Disconnector, Grounding Switch & CT), SF6 gas insulated Transformer Feeder Bay Module each comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Motorised Busbar 3 Phase Disconnector (2 Nos), Motorised Disconnector (1 No), Motorised safety Grounding switch (3 Nos), Local Control Cubicle, SF6 gas monitoring system for complete bay, SF6 bus duct termination arrangement (3 Nos), PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete ICT Feeder Bay Module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.		Set	2			

2.2	145kV, 2000A, 40kA for 3 sec (Busbar, CB, Disconnector, Grounding switch, CT & PT), SF6 gas insulated Line Feeder Bay Module each comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Single phase Line Potential Transformer (4 winding) (3 Nos), Motorised 3 Phase Busbar Disconnector (2 Nos), Motorised safety Grounding switch (2 Nos), Motorised 3 Phase Disconnector with high speed fault making Motorised Grounding switch (1 No), Local Control Cubicle, SF6 gas monitoring system for complete bay, SF6 bus duct termination arrangement (3 Nos), PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete Line Feeder Bay Module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.		Set	**2**			

2.3	145kV, 2000A, 40kA for 3 sec (Busbars, Disconnector, Grounding switch & bus PT), 1 Phase Isolated Bus-PT Bay Module comprisig of SF6 gas insulated metal enclosed busbars each enclosed in bus enclosures running along the length of the switchgear to interconnect each of circuit breaker bay module. Each busbar set shall be complete with Single phase bus Potential Transformer (4 winding) (3 Nos), Motorised 3 Phase Disconnector (1 No) , Motorised Busbar safety Grounding switch (1 No), Local Control Cubicle, SF6 gas monitoring system PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete the bus & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.		Set	**1**			
2.4	145kV, 2000A, 40kA for 3 sec (CB, Disconnector, Grounding switch & CT), SF6 gas insulated Bus Coupler Bay Module comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Motorised 3 Phase Disconnector (2 Nos), Motorised safety Grounding switch (2 Nos), Local Control Cubicle, SF6 gas monitoring system, PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete Bus Coupler Bay Module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.		Set	**1**			

2.5	Portable Partial Discharge Monitoring System (PDM): 145kV system shall have Portable Partial Discharge Monitoring System (PDM) & shall be capable for measuring PD in charged GIS environment, bandwidth in order of 100MHz–2GHz & provision to select a wide range of intermediate bandwidths and the principle of operation shall be based on UHF principle of detection. The Detection and measurement of PD and bouncing particles having in built large coloured LCD for displaying and storing facility in the instrument for further analysis to locate actual source of PD such as free conducting particles, floating components, voids in spacers, particle on spacer surfaces etc.		Set	**1**			
3	**245 KV,2000A,40KA,ISOLATORS**						
3.1	245 KV, 2000A, 40KA, Center break ISOLATORS WITH EARTH SWITCH		NOS	4			
4	216 KV, METAL OXIDE SURGE ARRESTOR,10 KA, class III		NOS	18			
5	220 KV Bus Post Insulators		NOS	6			
6	**145 KV,1250A,31.5KA,ISOLATORS**						
6.1	145 KV, 2000A, 40KA, Center break ISOLATORS WITH EARTH SWITCH		NOS	2			
7	120 KV METAL OXIDE SURGE ARRESTOR, 10 KA, Class III		NOS	12			
8	30 KV, METAL OXIDE SURGE ARRESTOR, 10kA, Class II (AIS) as per technical specification.		NOS	9			
9	**BUS BAR & CIRCUIT MATERIALS**						
9.1	LONG ROD ANTI FOG PORCELAIN INSULATORS						
9.1.1	120 KN INSULATOR		NOS	24			
9.1.2	90 KN INSULATOR		NOS	6			
9.2	ACSR MOOSE CONDUCTOR		KMS	3.2			
10	**HARDWARES & FITTINGS/SPACERS/CLAMP & CONNECTORS**						
10.1	220 KV Single Suspension(120 KN)H/W fitting for Twin Moose ACSR		NOS	12			
10.2	132 KV Single Suspension(90KN) H/W fitting for single Moose ACSR		NOS	6			
10.3	T- clamp for ACSR ZEBRA run to ACSR MOOSE drop		NOS	36			
10.4	T- clamp for ACSR PANTHER run to ACSR MOOSE drop		NOS	18			
10.5	220 KV PI clamp		NOS	6			
10.6	Spacer for Moose ACSR		NOS	36			
10.7	220 KV Isolator pad clamp		NOS	12			
10.8	220 KV LA Clamp		NOS	18			
10.9	132 KV Isolator pad clamp		NOS	6			
10.10	132 KV LA Clamp		NOS	12			
10.11	PG Clamp for ACSR Moose		NOS	108			

11	**XLPE Power Copper conductor cable for the GIS system (for 132 KV connectivity from GIS equipment to Auto Transformer & Gantry of Existing 132/33KV S/S)**						
11.1	132KV XLPE Copper Cable **1000 sq. mm** Single Core (from 132 KV GIS to 132KV Gantry)		**Mtrs**	3000			
11.2	132KV Cable termination kits (Outdoor GIS side) suitable for 1CX **1000 sq. mm** Copper Cable		NOS	12			
11.3	132 KV Cable termination kit including Cable to Air Bushing suitable for outdoor for 132 KV Feeders & Transformers suitable for 1CX1000 Sqmm copper cable.		NOS	12			
11.4	EHV cable accessories like, link box, SVL, bonding cables, earthing cable for 132 kV system as per tech specification.		LOT	1			
11.5	33KV XLPE Copper Cable **300 sq. mm** Single Core (For connectivity to Station Transformer)		**Mtrs**	1000			
11.6	33 KV Cable termination kit including Cable to Air Bushing suitable for outdoor for 33 KV suitable for 1CX300 Sqmm copper cable.		NOS	12			
12	**EARTH WIRES & IT'S HARDWARES & FITTING**						
12.1	Earthing Spikes of 9 mtr long each and Its Fittings in all respect. (220 kv side)		NOS	5			
12.2	Earthing Spikes of 7 mtr long each and Its Fittings in all respect. (132 kv side)		NOS	3			
13	**SUBSTATION EARTHING SYSTEMS**						
13.1	EARTHING CONDUCTOR FOR BURRIAL : 75X10 mm GI Flat for laying (*spacing maximum 5m both way*)		MT	48.000			
13.2	EARTHING CONDUCTOR: 50X6 mm **GI Flat** for Raiser from the burial earth mat to equipment,structure etc)		MT	4.000			
13.3	EARTHING DEVICE & ASSOCIATED ACCESSORIES (50 mm heavy duty GI PERFORATED PIPE 3 mtrs long for treated earth pit)		Nos.	50			
13.4	EARTHING DEVICE & ASSOCIATED ACCESSORIES 40mm MS rod 3 mtrs long for non treated earth pit)		Nos.	120			
14	G.I Cable Trays including support GI angle suitable for different sections i.e. Section:1-1,2-2,3-3 & 4-4 along with its accessories as per TS.						
14.1	G.I Cable Trays(size: 450x75x2500mm)		MTRS	2000			
14.2	G.I Cable Trays(size: 300x75x2500mm)		MTRS	2500			
14.3	G.I Cable Trays(size: 150x75x2500mm)		MTRS	2000			
14.4	Support G. I angle 50x50x6 mm for cable tray		MT	4			
15	SUB STATION SWITCYARD BMK,AC CONSOLE & OTHER MARSHALLING BOXES						
15.1	BAY MARSHALLING KIOSK ***(02 Nos. in 220 KV Bay,01 Nos. in 132 KV Bay BAY)***		NOS	3			
15.2	SWITCH YARD AC CONSOLE FOR LIGHTING ***(01 Nos. in 220 KV bay, 01 No. in 132 kv Bay)***		NOS	2			
15.3	SWITCH YARD RECEPTACLE BOARD FOR TFR OIL FILTERATION ***(01 No. near each 220/132 Auto Transformers)***		NOS	2			

15.4	SWITCH YARD RECEPTACLE BOARD FOR WELDING & OTHER EMERGENCY ***(01 No.)***		NOS	1			
17	**SWITCH YARD STRUCTURES (LATTICE TYPE FOR COLUMN & BEAMS AND PIPE TYPE FOR ALL EQUIPMENT) FOR 220KV, 132KV & 33 KV CLASS INCLUDING FOUNDATION BOLTS & NUTS.**						
17.1	**DIFFERENT TYPES OF COLUMNS WITH DETAILS**						
17.1.1	P1S-220 KV (NOMINAL UNIT WT- 4.5 MT)- **5 NOS)**		MT	22.500			
17.1.2	T1S 132KV (NOMINAL UNIT WT-1.2MT (3 NOS.)		MT	3.600			
17.2	**DIFFERENT TYPE OF BEAMS WITH DETAILS**						
17.2.1	Q1-220KV (NOMINAL UNIT WT- 1.5 MT) (4 NOS.)		MT	6.000			
17.2.2	G1 - 132KV (NOMINAL UNIT WT-0.62MT) (NOS)		MT	1.240			
17.3	**TOTAL WEIGHT OF COLUMN & BEAMS**		**MT**	**33.340**			
17.4	**EQUIPMENT SUPPORT STRUCTURES (LATTICE TYPE) FOR ALL 220KV & 132 KV EQUIPMENTS INCLUDING FOUNDATION BOLTS & NUTS**						
17.4.1	ISOLATORS-220KV (SI with E/S 4 Nos.)		MT	5.084			
17.4.2	ISOLATORS-132KV (SI with E/S-2 Nos.)		MT	1.318			
17.4.3	CVTS-220 KV (12 Nos.)		MT	2.652			
17.4.4	CVTS-132 KV (6 Nos)		MT	1.344			
17.4.5	Surge Arrester-220 KV(18 Nos.)		MT	5.258			
17.4.6	Surge Arrester-132 KV(12 Nos.)		MT	3.288			
17.4.7	BPI-220 KV (6Nos.)		MT	13.469			
17.4.8	Cable Termination Port -132 KV (24Nos)		MT	8.400			
17.5	**TOTAL WEIGHT OF EQUIPMENT STRUCTURES**		**MT**	**40.812**			
17.6	**Total weight of GI Nuts and Bolts for Columns, Beams & Equipment Structures**		**MT**	**2.041**			
18	**GENERAL EQUIPMENT & SUBSTATION ACCESSORIES**						
18.1	**POWER CABLES,1.1KV,XLPE & PVC ARMOURED, ALUMINIUM CONDUCTOR (As per Specification)**						
18.1.1	XLPE 3.5 CX185 mm^2		MTR	500			
18.1.2	XLPE 3.5 CX120 mm^2		MTR	500			
18.1.3	PVC 3.5 CX70 mm^2		MTR	300			
18.1.4	PVC 3.5 CX35 mm^2		MTR	500			
18.1.5	PVC 4 CX 16 mm^2		MTR	1000			
18.1.6	PVC 4CX 6 mm^2		MTR	1000			
18.1.7	PVC 2CX 6 mm^2		MTR	2000			
18.2	**CONTROL CABLES,1.1 KV, PVC,STRANDED COPPER(As per specification)**						
18.2.1	4 CX 2.5 mm^2		MTR	6000			
18.2.2	5 CX 2.5 mm^2		MTR	4000			
18.2.3	7CX 2.5 mm^2		MTR	5000			
18.2.4	10 CX 2.5 mm^2		MTR	10000			

18.2.5	12 CX 2.5 mm^2		MTR	5000			
18.2.6	16 CX 2.5 mm^2		MTR	2000			
18.2.7	19 CX 2.5 mm^2		MTR	2000			
18.2.8	1CX 120 mm^2 BAT TO BAT CHARGER & CHARGER TO DCDB		MTR	300			
19	**ACCESSORIES FOR PLCC SYSTEM With OPGW cable**						
19.1	48 Fibre Optic Approach cable along with HDPE Pipes		KM	0.50			
19.2	Optical line Terminal Equipment(OLTE) -STM4 type SDH equipment with integrated MUX & tributary cards for speech & data ports for interfacing of Speech & data which should be compatible with existing OPTCL system		No	1			
19.3	Digital Teleprotection Equipment and accessories to be suitable for interfacing with SDHMUX		No	1			
19.4	Supply of FODP(Fibre Optic Distribution Panel)48 F: Indoor type,rack mounted with FCPC coupling and pig tails(DWSm Fibre)		No	1			
19.5	48 V, 300 AH, maintenance free VRLA Battery set.		Set	1			
19.6	SMPS based Battery Charger of 75A suitable for 48V VRLA Battery set		No	1			
19.7	2.5 sq. mm muti strand 2 core control cable(power supply,Transducer/MFT PT supply)		Metre	300			
19.8	2.5 sq. mm multi strand 4 core control cable(Transducer/MFT CT supply)		Metre	300			
19.9	1.5 sq. mm multi strand 10 core control cable(Digital Input)		Metre	200			
19.10	10 sq. mm 2 core multi strand control cable(Battery)		Metre	100			
19.11	48V DCDB		Set	1			
19.12	Earth Flat, Cable Tray, Telephone cable, Foundation rail, Junction Box,.		Lot	1			
20	**SUPPLY OF POWER TRANSFORMER,STATION TRANSFORMER & OTHER MATERIALS FOR MEETING THE AUXILIARY SUPPLY OF THE SUB-STATION AS PER TECHNICAL SPECIFICATION**						
20.1	**AUTO TRANSFORMER: 220/132KV,160 MVA (inclusive of all costs towards type test charges, Mandatory spares, Spanners & Special tools, accessories, etc as specified in the Technical specification)**		NOS	2			
20.2	STATION TRANSFORMER 33KV/0.43 V,500 KVA (Confirming to Energy Efficiency Level 2 -AS PER SPECIFICATION & relevant IS)		NOS	2			

20.3	**One no. 4 pole structure (HDG Type) alongwith other equipment & materials for two nos station transformers:** 1.4 Pole structure (using 200X100 mm RS Joist) 2. Channel & Angle FOR BRACING OF, CHANNEL for the SA & Isolator & HG fuse etc. 3. 90 KN Disc/composite long rod Insulators for 33 KV (48 nos./12 sets) for bus, Bus stringing using ACSR moose conductor & tension hardwares,other clamps & connectors etc as per requirement. 4. 2sets of 33 KV Isolator (800 AMP) for 33 KV side of station trafo. 5. 2sets of 33 KV HG FUSE. 6. 100 Sq mm AAAC conductor suitable for connection between HG fuse & station transformer bushing. 7. 2 sets of LT OUT DOOR KIOSK MADE OUT OF 3mm CRCA sheet GI MARSHALLING BOX suitable for outdoor mounting. The bus bar suitable for 1000 AMP shall be arranged in the out door kiosk and other Facility like two sets of 400 Amps MCCB for incoming & outgoing with required sizes of terminal studs for power cable termination & any other accessories required. AII materials shall be As per relevant latest IS & as per the direction of Engg. in charge		SETS	2			
21	**SUBSTATION LIGHTING (AS PER SPECIFICATION AND APPROVED DRAWINGS) (Switch yard and other street area)**						
21.1	**SUB-STATION SWITCH YARD LIGHTING :** IT INCLUDES SUPPLY OF FIXTURES & LAMPS (LED) of reputed make (Philips/CGL/Bajaj/other approved make of OPTCL) with switch gear,GI Conduit etc.(Lighting fixtures are to be fixed rigidly on the Column at a suitable height so that the required lux can be achieved).(150 watt each). (* REMARKS : FOR SUPPLY OF ALL THE CABLES AS INDICATED ARE COVERED IN THE CABLE ITEMS AS INDICATED ABOVE)		SET	60			

21.2	**STREET LIGHTING**: GI Tubular Pole: (410-SP-24: IS 2713-Part-II-1980 or latest) Length of pole 8.5 mtrs(minimum weight 158 Kgs). & LED light fittings etc. (ALL THE STREET LIGHT POLE SHALL BE OF GI TUBULAR POLE AND PROVISION OF A GI JUNCTION BOX WITH SUITABLE COVERS AT A HEIGHT OF 1 METRE FROM THE GROUND. THE JUNCTION BOX SHALL HAVE PROVISION OF FUSES, BUSES, CONNECTORS FOR CABLE IN AND OUT. (IT INCLUDES SUPPLY OF LED LIGHTING FIXTURES WITH LAMPS of 100 Watts of reputed make (Philips/CGL/Bajaj/other approved make of OPTCL) & as per technical specification. (* REMARKS : FOR SUPPLY OF ALL THE CABLES AS INDICATED ARE COVERED IN THE CABLE ITEMS AS INDICATED ABOVE)		SET	25			
21.3	**OUTDOOR KIOSK (HDG type) FOR STREET LIGHTING PURPOSE** HAVING 2 NOS 200 AMP SWITCH FUSE UNITS AND , 6 NOS.OUT LETS OF 32 AMP MCB FOR STREET LIGHTING. (SUITABLE FOR XLPE CABLES(3.5 CORE 120 SQMM) FROM MAIN ACDB FROM CONTROL ROOM TO THE OUT DOOR KIOSK. XLPE CABLE OF 4C X 16 SQMM FROM OUTDOOR KIOSK TO THE STREET LIGHT POLES AND 4CX6 SQMM FROM POLE TO POLE AND 2CX6 SQMM FROM POLE TO LIGHTING FIXTURES. > 1 NO. OUTDOOR KIOSK FOR COLONY SUPPLY PURPOSE HAVING (* REMARKS : FOR SUPPLY OF ALL THE CABLES AS INDICATED ARE COVERED IN THE CABLE ITEMS AS INDICATED ABOVE)		SET	2			
21.4	40 Mtrs heigh Monopole (HDG) Lighting cum Lightning Mast including LED lighting fixtures (**240 watts each minimum 8 Nos**.) with control gear panel etc suitable for wind zone-V , with all other accessories like motor for hoisting/lowering the lighting platform & other switchgear and lighting control panel including required cable(copper) & other accessories etc.		SET	2			
21.5	**INDOOR LIGHTING (AS PER SPECIFICATION AND APPROVED DRAWINGS) (Control room building,Store shed,store room,Security room cum Visitors room and other area)**						

21.5.1	CONTROL ROOM BUILDING INDOOR LIGHTING, IT INCLUDES SUPPLY OF FIXTURES & LAMPS (LED) of reputed make (Philips/CGL/Bajaj/ other approved make of OPTCL) with switch gear,Conduit & other required materials for succesful illumination of the area/rooms.(No. of LED Lighting fixtures are to be calculated based on the illumination design considering the required lux level indicated in the technical spec & fixing of the same rigidly on the suitable height either ceiling & wall as required.)		LOT	1			
21.5.2	INDOOR LIGHTING OF SECURITY SHED CUM VISITORS ROOM,PUMP HOUSE,STORE SHED,STORE ROOM, FFPH BUILDING: IT INCLUDES SUPPLY OF FIXTURES & LAMPS (LED) of reputed make (Philips/CGL/Bajaj/ other approved make of OPTCL) with switch gear,Conduit & other required materials for succesful illumination of the area/rooms.(No. of LED Lighting fixtures are to be calculated based on the illumination design considering the required lux level indicated in the technical spec & fixing of the same rigidly on the suitable height either ceiling & wall as required.)		LOT	1			
21.6	2 TR CAPACITY SPLIT AIR CONDITIONING UNITS WITH REMOTE CONTROL FACILITY: INCLUDING SUPPLY OF 5 star rated AIR CONDITIONERS, Automatic Voltage Stabiliser,CONTROL BOXES ETC FOR COMPLETING THE A.C SCHEME.(AS PER SPECIFICATION) FOR CONTROL ROOM, CARRIER ROOM & CONFERENCE ROOM.,OFFICE ROOM etc which includes all type of cables & wires and a main control switch gear kiosk having sufficient outlet for each air conditioner unit.		SET	20			

22	**Supply of Smoke & Heat detection system**: Addressable optical Smoke & Heat Multi detector (adequate Nos) for **control room building** including all accessories, the Main control panel (Microprocessor based 2 loop fire alarm control panel expandable upto 18 loops fully networkable with each loop capable of taking 99 devices, 8 line x 40 character alpha- numeric liquid crystal display .The panel shall be soft addressable type . The panel shall be able to give pin point location of all fire/fault conditions. Further, the panel must be able to automatically switch off respective control switches when ever any alarm is triggered. The panel shall have in built rectifier, Loop cards,provision for externel & internal printer(if required), L C D unit to indicate Fire/Fault Signal with address and analog output, built in printer to log all fire or fault events complete in all respects, integral SMF lead acid batteries with sealed cells of 24 V capable of running for a minimum of 8 hours with integral battery charger complete as required and as per specification. The fire alarm panel shall be suitable for software integration with BMS & PA system ,wall mounting loop powered addressable type hooter with all accessories , addressable manual call box made of polycarbonate with plastic break glass front and complete with monitor module MCB, addressable isolator module with required PVC box, fittings and fixtures, wiring with PVC FRLS wire to cover the required for fire & smoke detection etc. (One control room building is to be provided with Heat & smoke detection). Should have facility for integration with SAS.		SET	1			
23	**FIRE FIGHTING SYSTEM(PORTABLE AND WHEEL MOUNTED SETS FOR CONTROL ROOM,EQUIPMENT LIKE TRANSFORMER AND OTHER AREAS AS PER TECH SPEC(REFER TS-INST TO BIDDER BEFORE DESIGN-SL NO 16-ANNEXURE - I)**						
23.1	FOAM TYPE-9 LTRS		NOS	5			
23.2	DRY CHEMICAL POWDER(TROLLEY MOUNTED)- 22.5 KGS		NOS	6			
23.3	DRY POWDER TYPE - 5 KGS		NOS	6			
23.4	CO_2 - 4.5 KGS		NOS	6			
23.5	CO_2 - 9 KGS		NOS	6			
23.6	CO_2 (TROLLY MOUNTED)- 22.5 KGS		NOS	4			
23.7	9 litre Water type		Nos.	4			
23.8	50 Litres Mechanical Foam type		Nos.	2			
23.9	FIRE BUCKET (6 NOS IN EACH STAND) WITH STAND		SET	5			

24	**SUBSTATION AUTOMATION SYSTEM** FOR 220/132 KV SUBSTATION ON PRP MODE: Design , engineering , drawing, supervision, installation , testing & commissioning of Substation Automation system alongwith Supply of the following 220 and 132 kV level of protection panels consisting of Bay control Units & numerical protection relays and other auxiliary relays suitable for SAS as per technical specification. (**220KV side:** COMPRISING OF 04 Nos. FEEDER BAYS + 02 TRANSFORMER BAYS + 01 Nos BUS COUPLER BAY & **132 KV side:** COMPRISING OF 02 Nos. FEEDER SAYS + 02 Nos TRANSFORMER BAYS + 01 No. BUS COUPLER BAY) **NOTE:** All protective relays & BCU shall be numerical type.						
24.1	Yard AC Kiosk :5000 mm (L)x4000mm (W)x 3300mm (H) with AC, **as per the Specification;**		Nos.	3			
24.2	Gate way panel for Sub-Station Automation (in PRP as per the specification & indicative drg) system (for All 220 & 132 KV side bays including the future bays),other accessories (comprising servers, engg. Station, works station (Main & standby), Remote station control, Colour Laser jet Printers & dot matrix printer for local station as per requirement and also for remote station, Ethernet Switches , LIU, Red Box, Multimode glass fibre Doublle jacket armoured optical cables, special cables like F.O patch cord & armoured FO cables of adequate length etc required for the system in all respect as per latest IEC 61850 standard, Inverters of required capacity & rating (3KVA-Input shall be both A.C & D.C and output shall be A.C) etc as per TS. A Full HD LED screen of 70 inches for display,SAS furnitures of Godrej make & including all type of accessories & as per technical specification.		SET	1			
24.3	**BCU for Substation Auxilliary** System (Datas for monitoring of Station AC, Station DC, Lighting, Fire fighting, Air conditioning, Diesel generator etc. as per the site requirement)		SET	1			
24.5	GPS System with PTP, IRIG-B, SNTP		SET	1			
24.6	**220 KV SIDE PROTECTION & OTHER PANELS**						
24.6.1	**FEEDER PROTECTION PANEL** (MAIN-I , MAIN-II & BACK-UP PROTECTION WITH AUTO RECLOSURE DISTANCE PROTECTION with Bay control unit (BCU) with all other relays & component required for complete prtection,control etc as per TS and also suitable for substation automation system.		NOS	2			

24.6.2	**TRANSFORMER PROTECTION PANEL** (DIFFERENTIAL I , REF I & BACK-UP PROTECTION & BCU for 220 KV side) & (Bay control unit-BCU for 132 KV side) CONSIDERING HV & LV side of 220/132 KV, 160 MVA Auto transformer with all other relays & component required for complete prtection,control etc as per TS and also suitable for substation automation system.		NOS	2			
24.6.3	**BUS COUPLER PROTECTION PANEL** with Bay control unit (BCU) & Back-up protection relay with with all other relays & component required for complete prtection,control etc as per TS and also suitable for substation automation system.		NOS	1			
24.6.4	**BUS-BAR PROTECTION PANEL** (Provision of bus bar modules for the future bays(two nos) and with with all other relays & component required for complete prtection etc as per TS and also suitable for substation automation system.		SET	1			
24.7	**132 KV SIDE PROTECTION PANELS**						
24.7.1	132KV FEEDER PROTECTION PANEL (MAIN-I & BACK-UP PROTECTION DISTANCE PROTECTION with Bay control unit (BCU) for substation automation system. (b) Supply of Main-I Line differential Protection only along with all other accessories required for succesful operation between Dhenkanal-A & Dhenkanal-B .		NOS	6			
24.7.2	**132 KV BUS COUPLER PROTECTION Panel** with Bay control unit (BCU) with with all other relays & component required for complete prtection,control etc as per TS and also suitable for substation automation system.		NOS	1			
25	**AC & DC SYSTEM**						
25.1	**AC SYSTEM**						
25.1.1	MAIN ACDB,(HAVING 800A, 50KA, DRAWOUT TYPE ACB WITH 3 O/C,E/F,U/V RELAYING FACILITY INDOOR TYPE AS PER SPECIFICATION.(MAIN DB-1,MAIN DB-2 WITH B/C)		SET	1			
25.1.2	ACDB (HAVING 400A MCCB) AS PER SPECIFICATION (ACDB-1, ACDB-2 WITH B/C)		SET	1			
25.1.3	MAIN LIGHTING DISTRIBUTION BOARD (HAVING 250A MCCB AS INCOMER)AS PER SPECIFICATION (WITH DB-1,DB-2 & B/C)		SET	1			
25.1.4	INDOOR LIGHTING DISTRIBUTION BOARD AS PER SPECIFICATION. (WITH DB-1,DB-2 & B/C)		SET	1			
25.1.5	EMERGENCY LIGHTING DISTRIBUTION BOARD		SET	1			
25.1.6	INDOOR RECEPTACLE BOARD		SET	1			
25.2	**DC SYSTEM**						
25.2.1	220 V DC BOARD (HAVING 100A DC MCCB AS INCOMER, E/F (EARTH LEAKAGE), UNDER & OVER VOLTAGE AS PER SPECIFICATION (DC DB-1,DC DB-2 & B/C)		SET	1			

25.2.2	220 V DC EMERGENCY DISTRIBUTION BOARD		SET	1			
26	BATTERY (350 AH PLANTE TYPE) FOR 220 V DC		SET	2			
27	BATTERY CHARGER FOR 220 V, 350 AH PLANTE TYPE BATTERY (FLOAT AND FLOAT CUM BOOST)		SET	2			
28	DISTILLED WATER PLANT OF 10 LTR/HR FOR BATTERY BANKS		SET	1			
29	WALKIE TALKIE SET		SET /PAIR	2			
30	PORTABLE ALUMINIUM LADDER EXTENDABLE TYPE OF ADEQUATE HEIGHT TO BE USED FOR MAINTENANCE OF EQUIPMENT INSIDE SWITCH YARD.		NOS	2			
31	PEDESTAL MOUNTED WHEEL FITTED DERRICK FOR LIFTING/ LOWERING OF MATERIALS UP TO 1.5 TON CAPACITY.		SET	1			
32	WATER COOLER WITH WATER PURIFIER SYSTEM		NOS	2			
33	MAINTENANCE TESTING EQUIPMENT (AS PER **ANNEXURE - I** ,INDICATED IN TS-TIMK-SCHEDULE OF REQUIREMENTS OF MAINTENANCE EQUIPMENT)		LOT	1			
34	OTHER TOOLS AND PLANTS (T&P's) REQUIREMENT (AS PER **ANNEXURE - II** ,INDICATED IN TS-TIMK-SCHEDULE OF REQUI-REMENTS OTHER T&P's)		LOT	1			
35	OFFICE FURNITURE (AS PER **ANNEXURE - III** ,INDICATED IN TS-TIMK-SCHEDULE OF REQUIREMENTS OFFICE FURNITURE)>PLACING IN CONTROL ROOM,CONFERENCE ROOM,OFFICE ROOMS,LIBRARY,TESTING LAB,etc.		LOT	1			
36	BEST QUALITY &APPROVED MAKE INSULATING MAT (Confirming to IS:15652:2006) TO BE KEPT INFRONT OF ALL PANELS,BOARDS ETC.(2000X1000X3)mm Size		NOS	50			
37	**EQUIPMENT and MATERIALS for GIS**						
37.1	**ACCESSORIES**						
37.1.1	SF6 Gas handling plant of adequate capacity as per the Technical specification.		SET	1			
37.1.2	SF6 gas service cart with all accessories as per the Technical specification.		SET	1			
37.2	**TESTING EQUIPMENT**						
37.2.1	GIS testing equipment as per the Technical specification.		SET	1			
38	**ESSENTIAL TOOLS and SPARES for GIS**						
38.1	**SPARES for 220KV GIS**						
38.1.1	Single phase voltage transformer		SET	1			
38.1.2	Single phase set of 5 cores current transformer including enclosure		SET	1			
38.1.3	Enclosure insulators and main circuit of busbar		SET	1			
38.1.4	Tripping and closing coils		SET	3			
38.1.5	SF6 Pressure gauges		SET	2			
38.1.6	SF6 Pressure relief devices		SET	2			
38.1.7	Auxiliary contacts for circuit breaker		SET	1			
38.1.8	Auxiliary contacts for DS and ES		SET	1			

38.1.9	SF6 gas in steel bottle 52 kg / bottle		NOS	2			
38.1.10	Spring charge motor for circuit breakers		UNIT	1			
38.1.11	Complete drive mechanism for disconnect switches and grounding switches		UNIT	1			
38.1.12	Motor for disconnect switches and grounding switches		UNIT	1			
38.1.13	Complete drive mechanism for fast acting grounding switches		UNIT	1			
38.1.14	Motor for fast acting grounding switches		UNIT	1			
38.1.15	Rupture disc for circuit breakers / potential transformer		NOS	1			
38.1.16	Set of spares for local control cabinet including M.C.B., fuses, time relays, auxiliary relays and terminals		SET	1			
38.1.17	Rupture disc for other compartments		NOS	2			
38.2	**SPARES for 132KV GIS**						
38.2.1	Single phase voltage transformer		SET	1			
38.2.2	Single phase set of 5 cores current transformer including enclosure		SET	1			
38.2.3	Enclosure insulators and main circuit of busbar		SET	1			
38.2.4	Tripping and closing coils		SET	3			
38.2.5	SF6 Pressure gauges		SET	2			
38.2.6	SF6 Pressure relief devices		SET	2			
38.2.7	Auxiliary contacts for circuit breaker		SET	1			
38.2.8	Auxiliary contacts for DS and ES		SET	1			
38.2.9	Spring charge motor for circuit breakers		UNIT	1			
38.2.10	Complete drive mechanism for disconnect switches and grounding switches		UNIT	1			
38.2.11	Motor for disconnect switches and grounding switches		UNIT	1			
38.2.12	Complete drive mechanism for fast acting grounding switches		UNIT	1			
38.2.13	Motor for fast acting grounding switches		UNIT	1			
38.2.14	Rupture disc for circuit breakers / potential transformer		NOS	1			
38.2.15	Set of spares for local control cabinet including M.C.B., fuses, time relays, auxiliary relays and terminals		SET	1			
38.2.16	Rupture disc for other compartments		NOS	2			
38.3	**SPECIAL TOOLS**						
38.3.1	SF6 gas leak detector as per the Technical specification.		SET	1			
38.3.2	SF6 gas analyzer as per the Technical specification.		SET	1			
38.3.3	Milli volt drop measurement applicance		SET	1			
38.3.4	One set of Box Spanner		SET	1			
38.3.5	One set of adjustable Spanner		SET	1			
38.3.6	SF6 gas bottle locking, measuring and filling assembly with all hose		SET	2			
38.3.7	One set of pipe grooving tools for the hydraulic operating mechanism		SET	1			
38.3.8	Infrared camera as per the Technical specification.		SET	1			
	TOTAL OF SUBSTATION-SCHEDULE-1 -Plant (to Schedule No. 6 Grand Summary)						

Name of Bidder:

Signature of Bidder:_____

[1] Bidders shall enter a code repre*senting the country of origin of all* imported plant and equipment.

[2] Specify currency in accordance with specifications in Bid Data Sheet under ITB 19.1 in Single-Stage Bid, or ITB 34.1 in Two-Stage Bid. Create and use as many columns for Unit Price and Total Price as there are currencies.

Country of Origin Declaration Form

Item	Description		Code	Country			

ODISHA POWER TRANSMISSION CORPORATION LIMITED

NAME OF THE WORK:-Design, Supply and Installation of 2X160MVA Auto Transformer ,220/132 KV Out Door Type GIS Grid Sub-station at (Gundichapada),Dhenkanal and 2 nos. 132KV Feeder bay extension at existing 132/33KV Dhenkanal grid sub-station for connectivity with Dhenkanal GIS in Odisha State of India under PACKAGE-1 Under Japan International Cooperation Agency (JICA)'s ODA Loan.

Loan Agreement No: [ID-P245] - FB No: [CPC/JICA/ICB/01/18-19]- Reference Identification No: [OPTCL/JICA/PKG-1]

Schedule No. 2. Plant Supplied from Within the Employer's Country (Sub-station)

NAME OF THE BIDDER

SL. NO.	SUPPLY OF FOLLOWING EQUIPMENTS (As per Technical Specification)	UNIT	Quantity for: Construction of 2x160 MVA Auto Transformer, 220/132 GIS S/S at (Gundichapada) Dhenkanal Out Door type GIS S/S (New)	Unit Price[1]	Total Price[1]
			(1)	*(2)*	*(1) x (2)*
1	**3150A, 50kA for 3s, Double Busbar Circuit Breaker (Circuit breaker shall be E2-C2-M2 class as per IEC 62271-100) arrangement.245kV OUTDOOR GIS EQUIPMENT as per latest IEC standard & type tested equipment as per technical specification, with open future proof & flexible system in line with IEC 61850 & IEC 62271-203.**				

1.1	245kV, 3150A, 50kA for 3 sec (Busbar, CB, Disconnector, Grounding Switch & CT), SF6 gas insulated **Transformer Feeder Bay** Module each comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Motorised Busbar 3 Phase Disconnector (2 Nos), Motorised Disconnector (1 No), Motorised safety Grounding switch (3 Nos), Local Control Cubicle, SF6 gas monitoring system for complete bay, SF6 bus duct termination arrangement (3 Nos), PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete ICT Feeder Bay Module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification(Price of the equipment has been converted from Japanese Yen to INR as per the selling rate on Dt.18.12.2018)	Set	**2**		

1.2	245kV, 3150A, 50kA for 3 sec (Busbar, CB, Disconnector, Grounding switch, CT & PT), SF6 gas insulated **Line Feeder** Bay Module each comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Single phase Line Potential Transformer (4 winding) (3 Nos), Motorised 3 Phase Busbar Disconnector (2 Nos), Motorised safety Grounding switch (2 Nos), Motorised 3 Phase Disconnector with high speed fault making Motorised Grounding switch (1 No), Local Control Cubicle, SF6 gas monitoring system for complete bay, SF6 bus duct termination arrangement (3 Nos), PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete Line Feeder Bay Module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.	Set	**4**		

1.3	245kV, 3150A, 50kA for 3 sec (Busbars, Disconnector, Grounding switch & bus PT), 1 Phase Isolated Bus-PT Bay Module comprisig of SF6 gas insulated metal enclosed busbars each enclosed in bus enclosures running along the length of the switchgear to interconnect each of circuit breaker bay module. Each busbar set shall be complete with Single phase bus Potential Transformer (4 winding) (3 Nos), Motorised 3 Phase Disconnector (1 No) , Motorised Busbar safety Grounding switch (1 No), Local Control Cubicle, SF6 gas monitoring system PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete the bus & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.	Set	**1**		

1.4	245kV, 3150A, 50kA for 3 sec (CB, Disconnector, Grounding switch & CT), SF6 gas insulated **Bus Coupler** Bay Module comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Motorised 3 Phase Disconnector (2 Nos), Motorised safety Grounding switch (2 Nos), Local Control Cubicle, SF6 gas monitoring system, PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete Bus Coupler Bay Module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.	Set	**1**		
1.5	245kV, 3150A, 50 kA, 3 sec, single phase, SF6 gas Insulated Bus Duct outside GIS Bay along with associated Support structure arrangement bends, joints,accessories, & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.	RM	**700**		
1.6	245kV, 3150A, 50kA SF6/Air BUSHING (Bushing shall be of Polymer / composite insulator type and shall be seamless sheath of a silicone rubber compound. The hollow silicone composite insulators shall comply as per IEC 61462 and IEC 62217. The design of the composite insulators shall be tested and verified according to IEC 61462) FOR CONNECTING GIS TO AIS along with support structure.	No.	18		

1.7	Portable Partial Discharge Monitoring System (PDM): 245kV system shall have Portable Partial Discharge Monitoring System (PDM) & shall be capable for measuring PD in charged GIS environment, bandwidth in order of 100MHz–2GHz & provision to select a wide range of intermediate bandwidths and the principle of operation shall be based on UHF principle of detection. The Detection and measurement of PD and bouncing particles having in built large coloured LCD for displaying and storing facility in the instrument for further analysis to locate actual source of PD such as free conducting particles, floating components, voids in spacers, particle on spacer surfaces etc.	Set	**1**		
2	**2000A, 40kA for 3s, Double Busbar Circuit Breaker (Circuit breaker shall be E2-C2-M2 class as per IEC 62271-100) arrangement.** **145kV OUTDOOR GIS EQUIPMENT as per latest IEC standard & type tested equipment as per technical specification, with open future proof & flexible system in line with IEC 61850 & IEC 62271-203.**				

2.1	145kV, 2000A, 40kA for 3 sec (Busbar, CB, Disconnector, Grounding Switch & CT), SF6 gas insulated Transformer Feeder Bay Module each comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Motorised Busbar 3 Phase Disconnector (2 Nos), Motorised Disconnector (1 No), Motorised safety Grounding switch (3 Nos), Local Control Cubicle, SF6 gas monitoring system for complete bay, SF6 bus duct termination arrangement (3 Nos), PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete ICT Feeder Bay Module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.	Set	2		

2.2	145kV, 2000A, 40kA for 3 sec (Busbar, CB, Disconnector, Grounding switch, CT & PT), SF6 gas insulated Line Feeder Bay Module each comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Single phase Line Potential Transformer (4 winding) (3 Nos), Motorised 3 Phase Busbar Disconnector (2 Nos), Motorised safety Grounding switch (2 Nos), Motorised 3 Phase Disconnector with high speed fault making Motorised Grounding switch (1 No), Local Control Cubicle, SF6 gas monitoring system for complete bay, SF6 bus duct termination arrangement (3 Nos), PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete Line Feeder Bay Module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.	Set	**2**		

2.3	145kV, 2000A, 40kA for 3 sec (Busbars, Disconnector, Grounding switch & bus PT), 1 Phase Isolated Bus-PT Bay Module comprisig of SF6 gas insulated metal enclosed busbars each enclosed in bus enclosures running along the length of the switchgear to interconnect each of circuit breaker bay module. Each busbar set shall be complete with Single phase bus Potential Transformer (4 winding) (3 Nos), Motorised 3 Phase Disconnector (1 No) , Motorised Busbar safety Grounding switch (1 No), Local Control Cubicle, SF6 gas monitoring system PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete the bus & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.	Set	**1**		

2.4	145kV, 2000A, 40kA for 3 sec (CB, Disconnector, Grounding switch & CT), SF6 gas insulated Bus Coupler Bay Module comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Motorised 3 Phase Disconnector (2 Nos), Motorised safety Grounding switch (2 Nos), Local Control Cubicle, SF6 gas monitoring system, PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete Bus Coupler Bay Module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.	Set	**1**		
2.5	Portable Partial Discharge Monitoring System (PDM): 145kV system shall have Portable Partial Discharge Monitoring System (PDM) & shall be capable for measuring PD in charged GIS environment, bandwidth in order of 100MHz–2GHz & provision to select a wide range of intermediate bandwidths and the principle of operation shall be based on UHF principle of detection. The Detection and measurement of PD and bouncing particles having in built large coloured LCD for displaying and storing facility in the instrument for further analysis to locate actual source of PD such as free conducting particles, floating components, voids in spacers, particle on spacer surfaces etc.	Set	**1**		
3	**245 KV,2000A,40KA,ISOLATORS**				
3.1	245 KV, 2000A, 40KA, Center break ISOLATORS WITH EARTH SWITCH	NOS	4		
4	216 KV, METAL OXIDE SURGE ARRESTOR,10 KA, class III	NOS	18		
5	220 KV Bus Post Insulators	NOS	6		
6	**145 KV,1250A,31.5KA,ISOLATORS**				

6.1	145 KV, 2000A, 40KA, Center break ISOLATORS WITH EARTH SWITCH	NOS	2		
7	120 KV METAL OXIDE SURGE ARRESTOR, 10 KA, Class III	NOS	12		
8	30 KV, METAL OXIDE SURGE ARRESTOR, 10kA, Class II (AIS) as per technical specification.	NOS	9		
9	**BUS BAR & CIRCUIT MATERIALS**				
9.1	LONG ROD ANTI FOG PORCELAIN INSULATORS				
9.1.1	120 KN INSULATOR	NOS	24		
9.1.2	90 KN INSULATOR	NOS	6		
9.2	ACSR MOOSE CONDUCTOR	KMS	3.2		
10	**HARDWARES & FITTINGS/SPACERS/CLAMP & CONNECTORS**				
10.1	220 KV Single Suspension(120 KN)H/W fitting for Twin Moose ACSR	NOS	12		
10.2	132 KV Single Suspension(90KN) H/W fitting for single Moose ACSR	NOS	6		
10.3	T- clamp for ACSR ZEBRA run to ACSR MOOSE drop	NOS	36		
10.4	T- clamp for ACSR PANTHER run to ACSR MOOSE drop	NOS	18		
10.5	220 KV PI clamp	NOS	6		
10.6	Spacer for Moose ACSR	NOS	36		
10.7	220 KV Isolator pad clamp	NOS	12		
10.8	220 KV LA Clamp	NOS	18		
10.9	132 KV Isolator pad clamp	NOS	6		
10.10	132 KV LA Clamp	NOS	12		
10.11	PG Clamp for ACSR Moose	NOS	108		
11	**XLPE Power Copper conductor cable for the GIS system (for 132 KV connectivity from GIS equipment to Auto Transformer & Gantry of Existing 132/33KV S/S)**				
11.1	132KV XLPE Copper Cable **1000 sq. mm** Single Core (from 132 KV GIS to 132KV Gantry)	**Mtrs**	3000		
11.2	132KV Cable termination kits (Outdoor GIS side) suitable for 1CX **1000 sq. mm** Copper Cable	NOS	12		
11.3	132 KV Cable termination kit including Cable to Air Bushing suitable for outdoor for 132 KV Feeders & Transformers suitable for 1CX1000 Sqmm copper cable.	NOS	12		
11.4	EHV cable accessories like, link box, SVL, bonding cables, earthing cable for 132 kV system as per tech specification.	LOT	1		
11.5	33KV XLPE Copper Cable **300 sq. mm** Single Core (For connectivity to Station Transformer)	**Mtrs**	1000		

11.6	33 KV Cable termination kit including Cable to Air Bushing suitable for outdoor for 33 KV suitable for 1CX300 Sqmm copper cable.	NOS	12		
12	**EARTH WIRES & IT'S HARDWARES & FITTING**				
12.1	Earthing Spikes of 9 mtr long each and Its Fittings in all respect. (220 kv side)	NOS	5		
12.2	Earthing Spikes of 7 mtr long each and Its Fittings in all respect. (132 kv side)	NOS	3		
13	**SUBSTATION EARTHING SYSTEMS**				
13.1	EARTHING CONDUCTOR FOR BURRIAL : 75X10 mm GI Flat for laying (*spacing maximum 5m both way*)	MT	48.000		
13.2	EARTHING CONDUCTOR: 50X6 mm **GI Flat** for Raiser from the burial earth mat to equipment,structure etc)	MT	4.000		
13.3	EARTHING DEVICE & ASSOCIATED ACCESSORIES (50 mm heavy duty GI PERFORATED PIPE 3 mtrs long for treated earth pit)	Nos.	50		
13.4	EARTHING DEVICE & ASSOCIATED ACCESSORIES 40mm MS rod 3 mtrs long for non treated earth pit)	Nos.	120		
14	G.I Cable Trays including support GI angle suitable for different sections i.e. Section:1-1,2-2,3-3 & 4-4 along with its accessories as per TS.				
14.1	G.I Cable Trays(size: 450x75x2500mm)	MTRS	2000		
14.2	G.I Cable Trays(size: 300x75x2500mm)	MTRS	2500		
14.3	G.I Cable Trays(size: 150x75x2500mm)	MTRS	2000		
14.4	Support G. I angle 50x50x6 mm for cable tray	MT	4		
15	SUB STATION SWITCYARD BMK,AC CONSOLE & OTHER MARSHALLING BOXES				
15.1	BAY MARSHALLING KIOSK ***(02 Nos. in 220 KV Bay,01 Nos. in 132 KV Bay BAY)***	NOS	3		
15.2	SWITCH YARD AC CONSOLE FOR LIGHTING ***(01 Nos. in 220 KV bay, 01 No. in 132 kv Bay)***	NOS	2		
15.3	SWITCH YARD RECEPTACLE BOARD FOR TFR OIL FILTERATION ***(01 No. near each 220/132 Auto Transformers)***	NOS	2		
15.4	SWITCH YARD RECEPTACLE BOARD FOR WELDING & OTHER EMERGENCY ***(01 No.)***	NOS	1		
17	**SWITCH YARD STRUCTURES (LATTICE TYPE FOR COLUMN & BEAMS) FOR 220KV, 132KV & 33 KV CLASS INCLUDING FOUNDATION BOLTS & NUTS.**				
17.1	**DIFFERENT TYPES OF COLUMNS WITH DETAILS**				
17.1.1	P1S-220 KV (NOMINAL UNIT WT- 4.5 MT)- **5 NOS)**	MT	22.500		
17.1.2	T1S 132KV (NOMINAL UNIT WT-1.2MT (3 NOS.)	MT	3.600		

17.2	**DIFFERENT TYPE OF BEAMS WITH DETAILS**				
17.2.1	Q1-220KV (NOMINAL UNIT WT- 1.5 MT) (4 NOS.)	MT	6.000		
17.2.2	G1 - 132KV (NOMINAL UNIT WT-0.62MT) (NOS)	MT	1.240		
17.3	**TOTAL WEIGHT OF COLUMN & BEAMS**	**MT**	**33.340**		
17.4	**EQUIPMENT SUPPORT STRUCTURES (LATTICE TYPE) FOR ALL 220KV & 132 KV EQUIPMENTS INCLUDING FOUNDATION BOLTS & NUTS**				
17.4.1	ISOLATORS-220KV (SI with E/S 4 Nos.)	MT	5.084		
17.4.2	ISOLATORS-132KV (SI with E/S-2 Nos.)	MT	1.318		
17.4.3	CVTS-220 KV (12 Nos.)	MT	2.652		
17.4.4	CVTS-132 KV (6 Nos)	MT	1.344		
17.4.5	Surge Arrester-220 KV(18 Nos.)	MT	5.258		
17.4.6	Surge Arrester-132 KV(12 Nos.)	MT	3.288		
17.4.7	BPI-220 KV (6Nos.)	MT	13.469		
17.4.8	Cable Termination Port -132 KV (24Nos)	MT	8.400		
17.5	**TOTAL WEIGHT OF EQUIPMENT STRUCTURES**	**MT**	**40.812**		
17.6	**Total weight of GI Nuts and Bolts for Columns, Beams & Equipment Structures**	**MT**	**2.041**		
18	**GENERAL EQUIPMENT & SUBSTATION ACCESSORIES**				
18.1	**POWER CABLES,1.1KV,XLPE & PVC ARMOURED, ALUMINIUM CONDUCTOR (As per Specification)**				
18.1.1	XLPE 3.5 CX185 mm^2	MTR	500		
18.1.2	XLPE 3.5 CX120 mm^2	MTR	500		
18.1.3	PVC 3.5 CX70 mm^2	MTR	300		
18.1.4	PVC 3.5 CX35 mm^2	MTR	500		
18.1.5	PVC 4 CX 16 mm^2	MTR	1000		
18.1.6	PVC 4CX 6 mm^2	MTR	1000		
18.1.7	PVC 2CX 6 mm^2	MTR	2000		
18.2	**CONTROL CABLES,1.1 KV, PVC,STRANDED COPPER(As per specification)**				
18.2.1	4 CX 2.5 mm^2	MTR	6000		
18.2.2	5 CX 2.5 mm^2	MTR	4000		
18.2.3	7CX 2.5 mm^2	MTR	5000		
18.2.4	10 CX 2.5 mm^2	MTR	10000		
18.2.5	12 CX 2.5 mm^2	MTR	5000		

18.2.6	16 CX 2.5 mm^2	MTR	2000		
18.2.7	19 CX 2.5 mm^2	MTR	2000		
18.2.8	1CX 120 mm^2 BAT TO BAT CHARGER & CHARGER TO DCDB	MTR	300		
19	**ACCESSORIES FOR PLCC SYSTEM With OPGW cable**				
19.1	48 Fibre Optic Approach cable along with HDPE Pipes	KM	0.50		
19.2	Optical line Terminal Equipment(OLTE) -STM4 type SDH equipment with integrated MUX & tributary cards for speech & data ports for interfacing of Speech & data which should be compatible with existing OPTCL system	No	1		
19.3	Digital Teleprotection Equipment and accessories to be suitable for interfacing with SDHMUX	No	1		
19.4	Supply of FODP(Fibre Optic Distribution Panel)48 F: Indoor type,rack mounted with FCPC coupling and pig tails(DWSm Fibre)	No	1		
19.5	48 V, 300 AH, maintenance free VRLA Battery set.	Set	1		
19.6	SMPS based Battery Charger of 75A suitable for 48V VRLA Battery set	No	1		
19.7	2.5 sq. mm muti strand 2 core control cable(power supply,Transducer/MFT PT supply)	Metre	300		
19.8	2.5 sq. mm multi strand 4 core control cable(Transducer/MFT CT supply)	Metre	300		
19.9	1.5 sq. mm multi strand 10 core control cable(Digital Input)	Metre	200		
19.10	10 sq. mm 2 core multi strand control cable(Battery)	Metre	100		
19.11	48V DCDB	Set	1		
19.12	Earth Flat, Cable Tray, Telephone cable, Foundation rail, Junction Box,.	Lot	1		
20	**SUPPLY OF POWER TRANSFORMER,STATION TRANSFORMER & OTHER MATERIALS FOR MEETING THE AUXILIARY SUPPLY OF THE**				
20.1	**AUTO TRANSFORMER: 220/132KV,160 MVA (inclusive of all costs towards type test charges, Mandatory spares, Spanners & Special tools, accessories, etc as specified in the Technical specification)**	NOS	2		
20.2	STATION TRANSFORMER 33KV/0.43 V,500 KVA (Confirming to Energy Efficiency Level 2 -AS PER SPECIFICATION & relevant IS)	NOS	2		

20.3	**One no. 4 pole structure (HDG Type) alongwith other equipment & materials for two nos station transformers:** 1.4 Pole structure (using 200X100 mm RS Joist) 2. Channel & Angle FOR BRACING OF, CHANNEL for the SA & Isolator & HG fuse etc. 3. 90 KN Disc/composite long rod Insulators for 33 KV (48 nos./12 sets) for bus, Bus stringing using ACSR moose conductor & tension hardwares,other clamps & connectors etc as per requirement. 4. 2sets of 33 KV Isolator (800 AMP) for 33 KV side of station trafo. 5. 2sets of 33 KV HG FUSE. 6. 100 Sq mm AAAC conductor suitable for connection between HG fuse & station transformer bushing. 7. 2 sets of LT OUT DOOR KIOSK MADE OUT OF 3mm CRCA sheet GI MARSHALLING BOX suitable for outdoor mounting. The bus bar suitable for 1000 AMP shall be arranged in the out door kiosk and other Facility like two sets of 400 Amps MCCB for incoming & outgoing with required sizes of terminal studs for power cable termination & any other accessories required. AII materials shall be As per relevant latest IS & as per the direction of Engg. in charge	SETS	2		
21	**SUBSTATION LIGHTING (AS PER SPECIFICATION AND APPROVED DRAWINGS) (Switch yard and other street area)**				
21.1	**SUB-STATION SWITCH YARD LIGHTING :** IT INCLUDES SUPPLY OF FIXTURES & LAMPS (LED) of reputed make (Philips/CGL/Bajaj/other approved make of OPTCL) with switch gear,GI Conduit etc.(Lighting fixtures are to be fixed rigidly on the Column at a suitable height so that the required lux can be achieved).(150 watt each). (* REMARKS : FOR SUPPLY OF ALL THE CABLES AS INDICATED ARE COVERED IN THE CABLE ITEMS AS INDICATED ABOVE)	SET	60		

21.2	**STREET LIGHTING**: GI Tubular Pole: (410-SP-24: IS 2713-Part-II-1980 or latest) Length of pole 8.5 mtrs(minimum weight 158 Kgs). & LED light fittings etc. (ALL THE STREET LIGHT POLE SHALL BE OF GI TUBULAR POLE AND PROVISION OF A GI JUNCTION BOX WITH SUITABLE COVERS AT A HEIGHT OF 1 METRE FROM THE GROUND. THE JUNCTION BOX SHALL HAVE PROVISION OF FUSES, BUSES, CONNECTORS FOR CABLE IN AND OUT. (IT INCLUDES SUPPLY OF LED LIGHTING FIXTURES WITH LAMPS of 100 Watts of reputed make (Philips/CGL/Bajaj/other approved make of OPTCL) & as per technical specification. (* REMARKS : FOR SUPPLY OF ALL THE CABLES AS INDICATED ARE COVERED IN THE CABLE ITEMS AS INDICATED ABOVE)	SET	25		
21.3	**OUTDOOR KIOSK (HDG type) FOR STREET LIGHTING PURPOSE** HAVING 2 NOS 200 AMP SWITCH FUSE UNITS AND , 6 NOS.OUT LETS OF 32 AMP MCB FOR STREET LIGHTING. (SUITABLE FOR XLPE CABLES(3.5 CORE 120 SQMM) FROM MAIN ACDB FROM CONTROL ROOM TO THE OUT DOOR KIOSK. XLPE CABLE OF 4C X 16 SQMM FROM OUTDOOR KIOSK TO THE STREET LIGHT POLES AND 4CX6 SQMM FROM POLE TO POLE AND 2CX6 SQMM FROM POLE TO LIGHTING FIXTURES. > 1 NO. OUTDOOR KIOSK FOR COLONY SUPPLY PURPOSE HAVING (* REMARKS : FOR SUPPLY OF ALL THE CABLES AS INDICATED ARE COVERED IN THE CABLE ITEMS AS INDICATED ABOVE)	SET	2		
21.4	40 Mtrs heigh Monopole (HDG) Lighting cum Lightning Mast including LED lighting fixtures (**240 watts each minimum 8 Nos**.) with control gear panel etc suitable for wind zone-V , with all other accessories like motor for hoisting/lowering the lighting platform & other switchgear and lighting control panel including required cable(copper) & other accessories etc.	SET	2		
21.5	**INDOOR LIGHTING (AS PER SPECIFICATION AND APPROVED DRAWINGS) (Control room building,Store shed,store room,Security room cum Visitors room and other area)**				

21.5.1	CONTROL ROOM BUILDING INDOOR LIGHTING, IT INCLUDES SUPPLY OF FIXTURES & LAMPS (LED) of reputed make (Philips/CGL/Bajaj/ other approved make of OPTCL) with switch gear,Conduit & other required materials for succesful illumination of the area/rooms.(No. of LED Lighting fixtures are to be calculated based on the illumination design considering the required lux level indicated in the technical spec & fixing of the same rigidly on the suitable height either ceiling & wall as required.)	LOT	1		
21.5.2	INDOOR LIGHTING OF SECURITY SHED CUM VISITORS ROOM,PUMP HOUSE,STORE SHED,STORE ROOM, FFPH BUILDING: IT INCLUDES SUPPLY OF FIXTURES & LAMPS (LED) of reputed make (Philips/CGL/Bajaj/ other approved make of OPTCL) with switch gear,Conduit & other required materials for succesful illumination of the area/rooms.(No. of LED Lighting fixtures are to be calculated based on the illumination design considering the required lux level indicated in the technical spec & fixing of the same rigidly on the suitable height either ceiling & wall as required.)	LOT	1		
21.6	2 TR CAPACITY SPLIT AIR CONDITIONING UNITS WITH REMOTE CONTROL FACILITY: INCLUDING SUPPLY OF 5 star rated AIR CONDITIONERS, Automatic Voltage Stabiliser,CONTROL BOXES ETC FOR COMPLETING THE A.C SCHEME.(AS PER SPECIFICATION) FOR CONTROL ROOM, CARRIER ROOM & CONFERENCE ROOM.,OFFICE ROOM etc which includes all type of cables & wires and a main control switch gear kiosk having sufficient outlet for each air conditioner unit.	SET	20		

22	**Supply of Smoke & Heat detection system**: Addressable optical Smoke & Heat Multi detector (adequate Nos) for **control room building** including all accessories, the Main control panel (Microprocessor based 2 loop fire alarm control panel expandable upto 18 loops fully networkable with each loop capable of taking 99 devices, 8 line x 40 character alpha- numeric liquid crystal display .The panel shall be soft addressable type . The panel shall be able to give pin point location of all fire/fault conditions. Further, the panel must be able to automatically switch off respective control switches when ever any alarm is triggered. The panel shall have in built rectifier, Loop cards,provision for externel & internal printer(if required), L C D unit to indicate Fire/Fault Signal with address and analog output, built in printer to log all fire or fault events complete in all respects, integral SMF lead acid batteries with sealed cells of 24 V capable of running for a minimum of 8 hours with integral battery charger complete as required and as per specification. The fire alarm panel shall be suitable for software integration with BMS & PA system ,wall mounting loop powered addressable type hooter with all accessories , addressable manual call box made of polycarbonate with plastic break glass front and complete with monitor module MCB, addressable isolator module with required PVC box, fittings and fixtures, wiring with PVC FRLS wire to cover the required for fire & smoke detection etc. (One control room building is to be provided with Heat & smoke detection). Should have facility for integration with SAS.	SET	1		
23	**FIRE FIGHTING SYSTEM(PORTABLE AND WHEEL MOUNTED SETS FOR CONTROL ROOM,EQUIPMENT LIKE TRANSFORMER AND OTHER AREAS AS PER TECH SPEC(REFER TS-INST TO BIDDER BEFORE DESIGN-SL NO 16-ANNEXURE - I)**				
23.1	FOAM TYPE-9 LTRS	NOS	5		
23.2	DRY CHEMICAL POWDER(TROLLEY MOUNTED)- 22.5 KGS	NOS	6		
23.3	DRY POWDER TYPE - 5 KGS	NOS	6		
23.4	CO_2 - 4.5 KGS	NOS	6		
23.5	CO_2 - 9 KGS	NOS	6		
23.6	CO_2 (TROLLY MOUNTED)- 22.5 KGS	NOS	4		

23.7	9 litre Water type	Nos.	4		
23.8	50 Litres Mechanical Foam type	Nos.	2		
23.9	FIRE BUCKET (6 NOS IN EACH STAND) WITH STAND	SET	5		
24	**SUBSTATION AUTOMATION SYSTEM** FOR 220/132 KV SUBSTATION ON PRP MODE: Design , engineering , drawing, supervision, installation , testing & commissioning of Substation Automation system alongwith Supply of the following 220 and 132 kV level of protection panels consisting of Bay control Units & numerical protection relays and other auxiliary relays suitable for SAS as per technical specification. (**220KV side:** COMPRISING OF 04 Nos. FEEDER BAYS + 02 TRANSFORMER BAYS + 01 Nos BUS COUPLER BAY & **132 KV side:** COMPRISING OF 02 Nos. FEEDER SAYS + 02 Nos TRANSFORMER BAYS + 01 No. BUS COUPLER BAY) **NOTE:** All protective relays & BCU shall be numerical type.				
24.1	Yard AC Kiosk :5000 mm (L)x4000mm (W)x 3300mm (H) with AC, **as per the Specification;**	Nos.	3		
24.2	Gate way panel for Sub-Station Automation (in PRP as per the specification & indicative drg) system (for All 220 & 132 KV side bays including the future bays),other accessories (comprising servers, engg. Station, works station (Main & standby), Remote station control, Colour Laser jet Printers & dot matrix printer for local station as per requirement and also for remote station, Ethernet Switches , LIU, Red Box, Multimode glass fibre Doublle jacket armoured optical cables, special cables like F.O patch cord & armoured FO cables of adequate length etc required for the system in all respect as per latest IEC 61850 standard, Inverters of required capacity & rating (3KVA-Input shall be both A.C & D.C and output shall be A.C) etc as per TS. A Full HD LED screen of 70 inches for display,SAS furnitures of Godrej make & including all type of accessories & as per technical specification.	SET	1		
24.3	**BCU for Substation Auxilliary** System (Datas for monitoring of Station AC, Station DC, Lighting, Fire fighting, Air conditioning, Diesel generator etc. as per the site requirement)	SET	1		
24.5	GPS System with PTP, IRIG-B, SNTP	SET	1		

24.6	**220 KV SIDE PROTECTION & OTHER PANELS**				
24.6.1	**FEEDER PROTECTION PANEL** (MAIN-I , MAIN-II & BACK-UP PROTECTION WITH AUTO RECLOSURE DISTANCE PROTECTION with Bay control unit (BCU) with all other relays & component required for complete prtection,control etc as per TS and also suitable for substation automation system.	NOS	2		
24.6.2	**TRANSFORMER PROTECTION PANEL** (DIFFERENTIAL I , REF I & BACK-UP PROTECTION & BCU for 220 KV side) & (Bay control unit-BCU for 132 KV side) CONSIDERING HV & LV side of 220/132 KV, 160 MVA Auto transformer with all other relays & component required for complete prtection,control etc as per TS and also suitable for substation automation system.	NOS	2		
24.6.3	**BUS COUPLER PROTECTION PANEL** with Bay control unit (BCU) & Back-up protection relay with with all other relays & component required for complete prtection,control etc as per TS and also suitable for substation automation system.	NOS	1		
24.6.4	**BUS-BAR PROTECTION PANEL** (Provision of bus bar modules for the future bays(two nos) and with with all other relays & component required for complete prtection etc as per TS and also suitable for substation automation system.	SET	1		
24.7	**132 KV SIDE PROTECTION PANELS**				
24.7.1	132KV FEEDER PROTECTION PANEL (MAIN-I & BACK-UP PROTECTION DISTANCE PROTECTION with Bay control unit (BCU) for substation automation system. (b) Supply of Main-I Line differential Protection only along with all other accessories required for succesful operation between Dhenkanal-A & Dhenkanal-B.	NOS	6		
24.7.2	**132 KV BUS COUPLER PROTECTION Panel** with Bay control unit (BCU) with with all other relays & component required for complete prtection,control etc as per TS and also suitable for substation automation system.	NOS	1		
25	**AC & DC SYSTEM**				
25.1	**AC SYSTEM**				

25.1.1	MAIN ACDB,(HAVING 800A, 50KA, DRAWOUT TYPE ACB WITH 3 O/C,E/F,U/V RELAYING FACILITY INDOOR TYPE AS PER SPECIFICATION.(MAIN DB-1,MAIN DB-2 WITH B/C)	SET	1		
25.1.2	ACDB (HAVING 400A MCCB) AS PER SPECIFICATION (ACDB-1, ACDB-2 WITH B/C)	SET	1		
25.1.3	MAIN LIGHTING DISTRIBUTION BOARD (HAVING 250A MCCB AS INCOMER)AS PER SPECIFICATION (WITH DB-1,DB-2 & B/C)	SET	1		
25.1.4	INDOOR LIGHTING DISTRIBUTION BOARD AS PER SPECIFICATION. (WITH DB-1,DB-2 & B/C)	SET	1		
25.1.5	EMERGENCY LIGHTING DISTRIBUTION BOARD	SET	1		
25.1.6	INDOOR RECEPTACLE BOARD	SET	1		
25.2	**DC SYSTEM**				
25.2.1	220 V DC BOARD (HAVING 100A DC MCCB AS INCOMER, E/F (EARTH	SET	1		
25.2.2	220 V DC EMERGENCY DISTRIBUTION BOARD	SET	1		
26	BATTERY (350 AH PLANTE TYPE) FOR 220 V DC	SET	2		
27	BATTERY CHARGER FOR 220 V, 350 AH PLANTE TYPE BATTERY	SET	2		
28	DISTILLED WATER PLANT OF 10 LTR/HR FOR BATTERY BANKS	SET	1		
29	WALKIE TALKIE SET	SET	2		
30	PORTABLE ALUMINIUM LADDER EXTENDABLE TYPE OF ADEQUATE	NOS	2		
31	PEDESTAL MOUNTED WHEEL FITTED DERRICK FOR LIFTING/ LOWERING OF MATERIALS UP TO 1.5 TON CAPACITY.	SET	1		
32	WATER COOLER WITH WATER PURIFIER SYSTEM	NOS	2		
33	MAINTENANCE TESTING EQUIPMENT (AS PER **ANNEXURE - I** ,INDICATED IN TS-TIMK-SCHEDULE OF REQUIREMENTS OF MAINTENANCE EQUIPMENT)	LOT	1		
34	OTHER TOOLS AND PLANTS (T&P's) REQUIREMENT (AS PER **ANNEXURE - II** ,INDICATED IN TS-TIMK-SCHEDULE OF REQUI-REMENTS OTHER T&P's)	LOT	1		
35	OFFICE FURNITURE (AS PER **ANNEXURE - III** ,INDICATED IN TS-TIMK-SCHEDULE OF REQUIREMENTS OFFICE FURNITURE)>PLACING IN CONTROL ROOM,CONFERENCE ROOM,OFFICE ROOMS,LIBRARY,TESTING LAB,etc.	LOT	1		
36	BEST QUALITY &APPROVED MAKE INSULATING MAT (Confirming to IS:15652:2006) TO BE KEPT INFRONT OF ALL PANELS,BOARDS ETC.(2000X1000X3)mm Size	NOS	50		
37	**EQUIPMENT and MATERIALS for GIS**				
37.1	**ACCESSORIES**				
37.1.1	SF6 Gas handling plant of adequate capacity as per the Technical specification.	SET	1		

37.1.2	SF6 gas service cart with all accessories as per the Technical specification.	SET	1		
37.2	**TESTING EQUIPMENT**				
37.2.1	GIS testing equipment as per the Technical specification.	SET	1		
38	**ESSENTIAL TOOLS and SPARES for GIS**				
38.1	**SPARES for 220KV GIS**				
38.1.1	Single phase voltage transformer	SET	1		
38.1.2	Single phase set of 5 cores current transformer including enclosure	SET	1		
38.1.3	Enclosure insulators and main circuit of busbar	SET	1		
38.1.4	Tripping and closing coils	SET	3		
38.1.5	SF6 Pressure gauges	SET	2		
38.1.6	SF6 Pressure relief devices	SET	2		
38.1.7	Auxiliary contacts for circuit breaker	SET	1		
38.1.8	Auxiliary contacts for DS and ES	SET	1		
38.1.9	SF6 gas in steel bottle 52 kg / bottle	NOS	2		
38.1.10	Spring charge motor for circuit breakers	UNIT	1		
38.1.11	Complete drive mechanism for disconnect switches and grounding switches	UNIT	1		
38.1.12	Motor for disconnect switches and grounding switches	UNIT	1		
38.1.13	Complete drive mechanism for fast acting grounding switches	UNIT	1		
38.1.14	Motor for fast acting grounding switches	UNIT	1		
38.1.15	Rupture disc for circuit breakers / potential transformer	NOS	1		
38.1.16	Set of spares for local control cabinet including M.C.B., fuses, time relays, auxiliary relays and terminals	SET	1		
38.1.17	Rupture disc for other compartments	NOS	2		
38.2	**SPARES for 132KV GIS**				
38.2.1	Single phase voltage transformer	SET	1		
38.2.2	Single phase set of 5 cores current transformer including enclosure	SET	1		
38.2.3	Enclosure insulators and main circuit of busbar	SET	1		
38.2.4	Tripping and closing coils	SET	3		
38.2.5	SF6 Pressure gauges	SET	2		
38.2.6	SF6 Pressure relief devices	SET	2		
38.2.7	Auxiliary contacts for circuit breaker	SET	1		
38.2.8	Auxiliary contacts for DS and ES	SET	1		
38.2.9	Spring charge motor for circuit breakers	UNIT	1		

38.2.10	Complete drive mechanism for disconnect switches and grounding switches	UNIT	1		
38.2.11	Motor for disconnect switches and grounding switches	UNIT	1		
38.2.12	Complete drive mechanism for fast acting grounding switches	UNIT	1		
38.2.13	Motor for fast acting grounding switches	UNIT	1		
38.2.14	Rupture disc for circuit breakers / potential transformer	NOS	1		
38.2.15	Set of spares for local control cabinet including M.C.B., fuses, time relays, auxiliary relays and terminals	SET	1		
38.2.16	Rupture disc for other compartments	NOS	2		
38.3	**SPECIAL TOOLS**				
38.3.1	SF6 gas leak detector as per the Technical specification.	SET	1		
38.3.2	SF6 gas analyzer as per the Technical specification.	SET	1		
38.3.3	Milli volt drop measurement applicance	SET	1		
38.3.4	One set of Box Spanner	SET	1		
38.3.5	One set of adjustable Spanner	SET	1		
38.3.6	SF6 gas bottle locking, measuring and filling assembly with all hose	SET	2		
38.3.7	One set of pipe grooving tools for the hydraulic operating mechanism	SET	1		
38.3.8	Infrared camera as per the Technical specification.	SET	1		
	TOTAL OF SUBSTATION-SCHEDULE-2-Plant (to Schedule No. 6 Grand Summary)				

Name of Bidder:_____

Signature of Bidder:_____

[1] Prices of Items quoted in Schedule No.1 shall not be quoted again in Schedule No. 2 and shall have a remark against the said row "Quoted in Schedule

ODISHA POWER TRANSMISSION CORPORATION LIMITED

NAME OF THE WORK:-Design, Supply and Installation of 2X160MVA Auto Transformer ,220/132 KV Out Door Type GIS Grid Sub-station at (Gundichapada),Dhenkanal and 2 nos. 132KV Feeder bay extension at existing 132/33KV Dhenkanal grid sub-station for connectivity with Dhenkanal GIS in Odisha State of India under PACKAGE-1 Under Japan International Cooperation Agency (JICA)'s ODA Loan.

Loan Agreement No: [ID-P245] - FB No: [CPC/JICA/ICB/01/18-19]- Reference Identification No: [OPTCL/JICA/PKG-1]

Schedule No. 1. Plant Supplied from Abroad (132KV Bay extension at existing 132/33KV Dhenkanal Grid Sub-station)

NAME OF THE BIDDER

SL. NO.	SUPPLY OF FOLLOWING EQUIPMENTS (As per Technical Specification)	Code[1]	UNIT	Quantity for: Construction of 2 nos. 132KV Feeder bay extension at existing 132/33KV Dhenkanal grid sub-station for connectivity with Dhenkanal GIS	Unit Price[2]		Total Price[2]
					In Foreign Currency	CIP	
				(1)	*(2)*	*(3)*	*(1) x (3)*
1	145 KV,800-400-200 A,31.5 KA,4CORE SINGLE PHASE CURRENT TRANSFORMER (3 NOS PS CLASS & 1 NO. 0.2s CLASS)		NOS	6			
2	**145 KV,1250A,31.5KA,ISOLATORS**						
'2.1	S/I WITH OUT EARTH SWITCH		NOS	2			
'2.2	D/I WITH SINGLE EARTH SWITCH		NOS	2			
3	145 KV,6600pF,3CORE,SINGLE PHASE CAPACITOR VOLTAGE TRANSFORMER		NOS	6			
5	132 KV Bus Post Insulators		NOS	4			
6	145KV, 3150A, 40KA, SF6, CIRCUIT BREAKER WITH SUPPORTING STRUCTURE		NOS	2			
7	**BUS BAR & CIRCUIT MATERIALS**						
7.1	TENSION & SUSPENSION ANTI FOG TYPE INSULATOR INSULATOR						
7.1.1	120 kN ANTIFOG LR Porcelain INSULATOR		Nos.	24			
7.1.1	90 kN ANTIFOG LR Porcelain INSULATOR		Nos.	6			
7.2	**CONDUCTORS**						
7.2.1	ACSR MOOSE CONDUCTER		KMS	1			
7.3	**HARDWARES & FITTINGS/SPACERS/CLAMP & CONNECTORS**						

7.3.1	132 KV Single Tension H/W fitting suitable for Single ACSR MOOSE Conducter		NOS	24			
7.3.2	132 KV Single Suspension H/W fitting suitable for ACSR MOOSE Conducter		NOS	6			
7.4	Clamps &Connectors , Spacers of 132KV Feeder Bay		SET	2			
7.5	**EARTH SPIKES & IT'S HARDWARES & FITTING**						
7.5.1	FOR 132KV SIDE :23 NOS @ 7 MTRS LENGTH EACH		SET	5			
8	**SUBSTATION EARTHING SYSTEMS**						
8.1	EARTHING CONDUCTOR FOR BURRIAL : 75X10 mm GI Flat for laying (*spacing maximum 5m both way*)		MT	8.37			
8.2	EARTHING CONDUCTOR: 50X6 mm **GI Flat** for Raiser from the burial earth mat to equipment,structure etc)		MT	2.25			
8.3	EARTHING DEVICE & ASSOCIATED ACCESSORIES (50 mm heavy duty GI PERFORATED PIPE 3 mtrs long for treated earth pit)		NOS	30.00			
8.4	EARTHING DEVICE & ASSOCIATED ACCESSORIES 40mm MS rod 3 mtrs long for non treated earth pit)		NOS	30.00			
8.5	**G.I Cable Trays including G.I. support Angle suitable for different sections i.e. Section:1-1,2-2,3-3 & 4-4 along with its accessories as per TS.**						
8.5.1	G.I Cable Trays(size: 450x75x2500mm)		MTRS	200.00			
8.5.2	G.I Cable Trays(size: 300x75x2500mm)		MTRS	300.00			
8.5.3	G.I Cable Trays(size: 150x75x2500mm)		MTRS	300.00			
8.5.4	Support G. I angle 50x50x6 mm for cable tray		MT	1			
9.0	SUB STATION SWITCYARD BMK, AC CONSOLE & OTHER MARSHALLING BOXES						
9.1	BAY MARSHALLING KIOSK		NOS.	2.00			
9.2	CT, PT & CVT Out Door Console Boxes		NOS.	4.00			
10	**SWITCH YARD STRUCTURES COLUMN & BEAM (LATTICE TYPE) FOR 132/33 KV CLASS INCLUDING FOUNDATION BOLTS & NUTS.**						
10.1	**DIFFERENT TYPES OF COLUMNS WITH DETAILS**						
10.1.1	T1S - 132 KV(NOMINAL UNIT WT- 1.2 MT) = 4 Sets		MT	4.80			
10.1.2	T4S - 132KV (NOMINAL UNIT WT- 0.92 MT) = 1 Set		MT	0.92			
10.2	**DIFFERENT TYPE OF BEAMS WITH DETAILS**						
10.2.1	G1 - 132 KV(NOMINAL UNIT WT- 0.58 MT) = 4 Sets		MT	2.32			
10.2.2	G2 - 132 KV(NOMINAL UNIT WT- 0.9 MT) = 2Sets		MT	1.8			
10.2.3	**TOTAL WEIGHT OF COLUMN & BEAM**		**MT**	**9.84**			
11	**SWITCH YARD EQUIPMENT STRUCTURES (LATTICE TYPE) FOR 132/33 KV CLASS INCLUDING FOUNDATION BOLTS & NUTS.**						
11.1	ISOLATORS-132KV						
11.2	S.I. WITHOUT E/S (Unit weight - 658.767 Kg) = 2 No.		MT	1.32			

11.3	D.I. WITH E/S (Unit Weight - 1120.559 Kg) = 2 No.		MT	2.24			
11.4	CTS-132 KV (Unit Weight - 214.546 Kg) = 6 Nos.		MT	1.29			
11.5	Surge Arrester-132 kV (Unit Weight - 179.893 Kg) = 6 Nos.		MT	1.08			
11.6	BPI-132 KV (Unit Weight - 309.883 Kg) = 6 Nos.		MT	1.86			
11.7	**TOTAL WEIGHT OF EQUIPMENT STRUCTURE**		**MT**	**7.79**			
11.8	**Total weight of GI Nuts and bolts for the above Column, Beam & structures**		**MT**	**1**			
12	**GENERAL EQUIPMENT & SUBSTATION ACCESSORIES**						
12.1	**POWER CABLES,1.1KV,XLPE/PVC ARMOURED, ALUMINIUM CONDUCTOR (As per Specification)**						
12.1.1	PVC 3.5 CX35 mm^2		MTRS	200			
12.1.2	PVC 4 CX 6 mm^2		MTRS	250			
12.1.3	PVC 2CX 6 mm^2		MTRS	500			
12.3	**CONTROL CABLES,1.1 KV, PVC,STRANDED COPPER(As per specification)**						
12.3.1	2 CX 2.5 mm2		MTRS	500			
12.3.2	4 CX 2.5 mm^2		MTRS	2000			
12.3.3	5 CX 2.5 mm^2		MTRS	500			
12.3.4	7CX 2.5 mm^2		MTRS	500			
12.3.5	10 CX 2.5 mm^2		MTRS	1000			
12.3.6	12 CX 2.5 mm^2		MTRS	1000			
13	**SUB STATION LIGHTING (AS PER SPECIFICATION AND APPROVED DRAWINGS)(Switch yard and other street area)**						
13.1	**SUB-STATION SWITCH YARD LIGHTING,IT INCLUDES SUPPLY OF FIXTURES & LAMPS (LED) of** reputed make (Philips/CGL/Bajaj/ other approved make of OPTCL) **with switch gear etc.(Lighting fixtures are to be fixed rigidly on the Column at a suitable height so that the required lux can be achieved.(150 watt each)**		SET	8			
14	**AIRCONDITIONING**						

14.1	2 TR CAPACITY SPLIT AIR CONDITIONING UNITS WITH REMOTE CONTROL FACILITY: INCLUDING SUPPLY OF 5 star rated AIR CONDITIONERS, Automatic Voltage Stabiliser,CONTROL BOXES ETC FOR COMPLETING THE A.C SCHEME.(AS PER SPECIFICATION) FOR CONTROL ROOM, CARRIER ROOM & CONFERENCE ROOM.,OFFICE ROOM etc which includes all type of cables & wires and a main control switch gear kiosk having sufficient outlet for each air conditioner unit.		NOS	2			
15	PROTECTION,CONTROL METERING, EVENT LOGGER,BUS BAR PROTN PAN,COMM PAN, RELAY TOOL KITS AS PER TECH SPEC						
15.1	132 KV SIDE						
15.2	132KV FEEDER PROTECTION PANEL (MAIN-I & BACK-UP PROTECTION DISTANCE PROTECTION with Bay control unit (BCU) for substation automation system. (b) Supply of Main-I Line differential Protection only along with all other accessories required for succesful operation between Dhenkanal-B & Dhenkanal-A.		NOS	2			
16	BEST QUALITY &APPROVED MAKE INSULATING MAT (Confirming to IS:15652:2006) TO BE KEPT INFRONT OF ALL PANELS,BOARDS ETC.(2000X1000X3)mm Size		SET	4			
	TOTAL OF SUBSTATION-SCHEDULE-1 -Plant (to Schedule No. 6 Grand Summary)						

Name of Bidder:_____

Signature of Bidder:_____

[1] Bidders shall enter a code repre*senting the country of origin of all* imported plant and equipment.

[2] Specify currency in accordance with specifications in Bid Data Sheet under ITB 19.1 in Single-Stage Bid, or ITB 34.1 in Two-Stage Bid. Create and use as many columns for Unit Price and Total Price as there are currencies.

Country of Origin Declaration Form

Item	**Description**		**Code**	**Country**			

ODISHA POWER TRANSMISSION CORPORATION LIMITED

NAME OF THE WORK:-Design, Supply and Installation of 2X160MVA Auto Transformer ,220/132 KV Out Door Type GIS Grid Sub-station at (Gundichapada),Dhenkanal and 2 nos. 132KV Feeder bay extension at existing 132/33KV Dhenkanal grid sub-station for connectivity with Dhenkanal GIS in Odisha State of India under PACKAGE-1 Under Japan International Cooperation Agency (JICA)'s ODA Loan.

Loan Agreement No: [ID-P245] - FB No: [CPC/JICA/ICB/01/18-19]- Reference Identification No: [OPTCL/JICA/PKG-1]

Schedule No. 2. Plant Supplied from Within the Employer's Country (132KV Bay extension at existing 132/33KV Dhenkanal Grid Sub-station)

NAME OF THE BIDDER

SL. NO.	SUPPLY OF FOLLOWING EQUIPMENTS (As per Technical Specification)	UNIT	Quantity for: Construction of 2 nos. 132KV Feeder bay extension at existing 132/33KV Dhenkanal grid sub-station for connectivity with Dhenkanal GIS	Unit Price[1]	Total Price[1]
			(1)	*(2)*	*(1) x (2)*
1	145 KV,800-400-200 A,31.5 KA,4CORE SINGLE PHASE CURRENT TRANSFORMER (3 NOS PS CLASS & 1 NO. 0.2s CLASS)	NOS	6		
2	**145 KV,1250A,31.5KA,ISOLATORS**				
'2.1	S/I WITH OUT EARTH SWITCH	NOS	2		
'2.2	D/I WITH SINGLE EARTH SWITCH	NOS	2		
3	145 KV,6600pF,3CORE,SINGLE PHASE CAPACITOR VOLTAGE TRANSFORMER	NOS	6		
5	132 KV Bus Post Insulators	NOS	4		
6	145KV, 3150A, 40KA, SF6, CIRCUIT BREAKER WITH SUPPORTING STRUCTURE	NOS	2		
7	**BUS BAR & CIRCUIT MATERIALS**				
7.1	TENSION & SUSPENSION ANTI FOG TYPE INSULATOR INSULATOR				
7.1.1	120 kN ANTIFOG LR Porcelain INSULATOR	Nos.	24		
7.1.1	90 kN ANTIFOG LR Porcelain INSULATOR	Nos.	6		
7.2	**CONDUCTORS**				
7.2.1	ACSR MOOSE CONDUCTER	KMS	1		

7.3	**HARDWARES & FITTINGS/SPACERS/CLAMP & CONNECTORS**				
7.3.1	132 KV Single Tension H/W fitting suitable for Single ACSR MOOSE Conducter	NOS	24		
7.3.2	132 KV Single Suspension H/W fitting suitable for ACSR MOOSE Conducter	NOS	6		
7.4	Clamps &Connectors , Spacers of 132KV Feeder Bay	SET	2		
7.5	**EARTH SPIKES & IT'S HARDWARES & FITTING**				
7.5.1	FOR 132KV SIDE :23 NOS @ 7 MTRS LENGTH EACH	SET	5		
8	**SUBSTATION EARTHING SYSTEMS**				
8.1	EARTHING CONDUCTOR FOR BURRIAL : 75X10 mm GI Flat for laying (*spacing maximum 5m both way*)	MT	8.37		
8.2	EARTHING CONDUCTOR: 50X6 mm **GI Flat** for Raiser from the burial earth mat to equipment,structure etc)	MT	2.25		
8.3	EARTHING DEVICE & ASSOCIATED ACCESSORIES (50 mm heavy duty GI PERFORATED PIPE 3 mtrs long for treated earth pit)	NOS	30.00		
8.4	EARTHING DEVICE & ASSOCIATED ACCESSORIES 40mm MS rod 3 mtrs long for non treated earth pit)	NOS	30.00		
8.5	**G.I Cable Trays including G.I. support Angle suitable for different sections i.e. Section:1-1,2-2,3-3 & 4-4 along with its accessories as per TS.**				
8.5.1	G.I Cable Trays(size: 450x75x2500mm)	MTRS	200.00		
8.5.2	G.I Cable Trays(size: 300x75x2500mm)	MTRS	300.00		
8.5.3	G.I Cable Trays(size: 150x75x2500mm)	MTRS	300.00		
8.5.4	Support G. I angle 50x50x6 mm for cable tray	MT	1		
9.0	SUB STATION SWITCYARD BMK, AC CONSOLE & OTHER MARSHALLING BOXES				
9.1	BAY MARSHALLING KIOSK	NOS.	2.00		
9.2	CT, PT & CVT Out Door Console Boxes	NOS.	4.00		
10	**SWITCH YARD STRUCTURES COLUMN & BEAM (LATTICE TYPE) FOR 132/33 KV CLASS INCLUDING FOUNDATION BOLTS & NUTS.**				
10.1	**DIFFERENT TYPES OF COLUMNS WITH DETAILS**				
10.1.1	T1S - 132 KV(NOMINAL UNIT WT- 1.2 MT) = 4 Sets	MT	4.80		
10.1.2	T4S - 132KV (NOMINAL UNIT WT- 0.92 MT) = 1 Set	MT	0.92		
10.2	**DIFFERENT TYPE OF BEAMS WITH DETAILS**				
10.2.1	G1 - 132 KV(NOMINAL UNIT WT- 0.58 MT) = 4 Sets	MT	2.32		
10.2.2	G2 - 132 KV(NOMINAL UNIT WT- 0.9 MT) = 2Sets	MT	1.8		
10.2.3	**TOTAL WEIGHT OF COLUMN & BEAM**	**MT**	**9.84**		
11	**SWITCH YARD EQUIPMENT STRUCTURES (LATTICE TYPE) FOR 132/33 KV CLASS INCLUDING FOUNDATION BOLTS & NUTS.**				
11.1	ISOLATORS-132KV				
11.2	S.I. WITHOUT E/S (Unit weight - 658.767 Kg) = 2 No.	MT	1.32		
11.3	D.I. WITH E/S (Unit Weight - 1120.559 Kg) = 2 No.	MT	2.24		

11.4	CTS-132 KV (Unit Weight - 214.546 Kg) = 6 Nos.	MT	1.29		
11.5	Surge Arrester-132 kV (Unit Weight - 179.893 Kg) = 6 Nos.	MT	1.08		
11.6	BPI-132 KV (Unit Weight - 309.883 Kg) = 6 Nos.	MT	1.86		
11.7	**TOTAL WEIGHT OF EQUIPMENT STRUCTURE**	**MT**	**7.79**		
11.8	**Total weight of GI Nuts and bolts for the above Column, Beam & structures**	**MT**	**1**		
12	**GENERAL EQUIPMENT & SUBSTATION ACCESSORIES**				
12.1	**POWER CABLES,1.1KV,XLPE/PVC ARMOURED, ALUMINIUM CONDUCTOR (As per Specification)**				
12.1.1	PVC 3.5 CX35 mm^2	MTRS	200		
12.1.2	PVC 4 CX 6 mm^2	MTRS	250		
12.1.3	PVC 2CX 6 mm^2	MTRS	500		
12.3	**CONTROL CABLES,1.1 KV, PVC,STRANDED COPPER(As per specification)**				
12.3.1	2 CX 2.5 mm2	MTRS	500		
12.3.2	4 CX 2.5 mm^2	MTRS	2000		
12.3.3	5 CX 2.5 mm^2	MTRS	500		
12.3.4	7CX 2.5 mm^2	MTRS	500		
12.3.5	10 CX 2.5 mm^2	MTRS	1000		
12.3.6	12 CX 2.5 mm^2	MTRS	1000		
13	**SUB STATION LIGHTING (AS PER SPECIFICATION AND APPROVED DRAWINGS)(Switch yard and other street area)**				
13.1	**SUB-STATION SWITCH YARD LIGHTING,IT INCLUDES SUPPLY OF FIXTURES & LAMPS (LED) of** reputed make (Philips/CGL/Bajaj/ other approved make of OPTCL) **with switch gear etc.(Lighting fixtures are to be fixed rigidly on the Column at a suitable height so that the required lux can be achieved.(150 watt each)**	SET	8		
14	**AIRCONDITIONING**				
14.1	2 TR CAPACITY SPLIT AIR CONDITIONING UNITS WITH REMOTE CONTROL FACILITY: INCLUDING SUPPLY OF 5 star rated AIR CONDITIONERS, Automatic Voltage Stabiliser,CONTROL BOXES ETC FOR COMPLETING THE A.C SCHEME.(AS PER SPECIFICATION) FOR CONTROL ROOM, CARRIER ROOM & CONFERENCE ROOM.,OFFICE ROOM etc which includes all type of cables & wires and a main control switch gear kiosk having sufficient outlet for each air conditioner unit.	NOS	2		

15	PROTECTION,CONTROL METERING, EVENT LOGGER,BUS BAR PROTN PAN,COMM PAN, RELAY TOOL KITS AS PER TECH SPEC				
15.1	132 KV SIDE				
15.2	132KV FEEDER PROTECTION PANEL (MAIN-I & BACK-UP PROTECTION DISTANCE PROTECTION with Bay control unit (BCU) for substation automation system. (b) Supply of Main-I Line differential Protection only along with all other accessories required for succesful operation between Dhenkanal-B & Dhenkanal-A.	NOS	2		
16	BEST QUALITY &APPROVED MAKE INSULATING MAT (Confirming to IS:15652:2006) TO BE KEPT INFRONT OF ALL PANELS,BOARDS ETC.(2000X1000X3)mm Size	SET	4		
	TOTAL OF SUBSTATION-SCHEDULE-2 -Plant (to Schedule No. 6 Grand Summary)				

Name of Bidder:_____

Signature of

[1] Prices of Items quoted in Schedule No.1 shall not be quoted again in Schedule No. 2 and shall have a remark against the said row "Quoted in Schedule No.-1".

ODISHA POWER TRANSMISSION CORPORATION LIMITED

NAME OF THE WORK:-Design, Supply and Installation of 2X160MVA Auto Transformer ,220/132 KV Out Door Type GIS Grid Sub-station at (Gundichapada),Dhenkanal and 2 nos. 132KV Feeder bay extension at existing 132/33KV Dhenkanal grid sub-station for connectivity with Dhenkanal GIS in Odisha State of India under PACKAGE-1 Under Japan International Cooperation Agency (JICA)'s ODA Loan.

Loan Agreement No: [ID-P245] - FB No: [CPC/JICA/ICB/01/18-19]- Reference Identification No: [OPTCL/JICA/PKG-1]

Schedule No. 4. Installation and Other Services (Sub-station)

NAME OF THE BIDDER							
SL. NO.	ERECTION,TESTING & COMMISSIONING OF FOLLOWING EQUIPMENT/MATERIALS ALONG WITH CIVIL WORKS (As per Technical Specification)	UNIT	Quantity for: Construction of 2x160 MVA Auto Transformer, 220/132 GIS S/S at (Gundichapada) Dhenkanal Out Door type GIS S/S (New)	Unit Price [1]		Total Price [1]	
				Foreign Currency Portion	Local Currency Portion	Foreign Currency Portion	Local Currency Portion
			1	2	3	(1x2)	(1x3)
PART A	CIVIL WORKS						
1	CONTOUR SURVEY,AND LEVELING, BACK FILLING						
1.1	**Contour survey** and furnishing contour map including supply of all materials, Labour and T&P	SQ.MTRS.	50000				
1.2	Soil investigation : Supply of labour,T&Pand other necessary arrangements for Soil investigation/testing of the Switchyard,control Room, Quarters area etc.as per the site requirement,Technical specification & instruction of Engineer-in-Charge.	PER POINT	5				
2	**Cutting, Filling and Leveling of Sub-station area including supply of labour and T&P**						

2.1	**LEVELLING OF S/S AREA**:Providing, neatly dressing up and levelling of substation area including switchyard area to a required level as decided by the Engineer in Charge, the work includes removal, clearing of the entire area from vegetation, trees, bushes, uprooting of plants and disposal of surplus earth and unusable material from the site by means of any mechanical transport, if required as per direction of the Project In charge, with all labours, tools, tackles and plants complete as per approved drawing and specification. This also includes excavation in all type of soils or rocks, back filling and disposal of excess earth or rocks to make the area to a level for construction as per scope and as per approved drawing and specification.						
2.1.1	**CUTTING** of substation area						
2.1.1.1	[i]Soft/loose soil	CUM	500				
2.1.1.2	[ii]Dense/ Compact soil	CUM	3000				
2.1.1.3	[iii]Soft/Disintegrated rock[not requiring blasting]	CUM	1000				
2.1.1.4	[iv]Hard rock[requiring blasting or by using concrete breaker machinery]	CUM	500				
2.1.2	**FILLING** of substation area with borrowed earth with supply of all labour,T & P.						
2.1.2.1	Beyond 30 mtr & up to 100mtr lead	CUM	15000				
2.1.2.2	Beyond 100mtr lead	CUM	20000				
3	**Anti-Weed Treatment**						
3.1	Supply of labour,T&P,Chemicals and other necessary arrangements for anti-weed treatment of the switch-yard areas,controlroom etc. as per the instruction of Engineer-in-Charge.	Sq.Mtrs	37500				

4	**Boundary wall** : Soil investigation,Design, engineering,procurement of material like cement,steel,bricks',Y" post with barbed wire and concertina coil fencing 600mm Dia10 guage with Razer edeges including other materials ad labour including all associated works for construction of boundary-wall along the property line of the sub-station as per technical specification and instruction of the Engineer in Charge.(the size of the bricks shall be 250mm having 1st class Fly-ash brick having compressive strength with 75kg/cm2). This also includes excavation in all types of soil or rocks,backfilling,and disposal of excess earth as per the direction of Engineer In charge.(**APPROXIMATE LENGHTH OF THE BOUNDARY WALL) and approved drawing.						
4.1	**Appox length of the boundary walls(Brick works rested on RCC Beam and RCC Column & footings as per TS) in mtrs**	R. Mtrs.	750				
5	**Excavation for OPEN CAST foundation and back filling of columns,Equipments foundations,including supply of all labours,T&P,and materials and as per the direction of the Engineer-in-Charge.**						
5.1	Soft Soil/Loose Soil.	CUM	600				
5.2	Hard Soil.	CUM	1500				
5.3	Wet/Muddy Soil.	CUM	300				
5.4	Soft/Disintegrated Rock(not Requiring Blasting)	CUM	400				
5.5	Hard Rock (Requiring Blasting/Using Rock Breaker Machinery)	CUM	200				
6	**OPEN CAST/SHALLOW FOUNDATION CONCRETE WORKS**						
6.1	Foundations : Design, engineering, supply of all labour, material and construction(open cast foundation) of PCC, RCC footings of any depth, pedestal including the cost of soil investigation, concreting, cement, reinforcement steel (FE500 or above Grade), shuttering, grouting, underpinning and back filling of foundations etc complete for the switchyard gantry/ portal /column structures and equipment support as per the technical specification and approved drawings & disposal of excess earth as per the direction of Engineer In charge.						

6.1.1	Design, Engineering, Providing and laying of plain cement concrete (PCC 1:3:6) of grade M10 with approved quality coarse aggregates (Nominal size 12mm to 20mm) , fine aggregates, cement in column and equipment foundation as blind layer inclusive of labour charges for concrete mixing & curing. This includes supply of all labourers, T&P and dewatering wherever required as per Technical specification and instruction of Engineer In charge.	CUM	285.13				
6.1.2	Open cast foundation for the above column/equipment/marshalling box foundations with RCC: 1:1.5:3 (Grade M-20), in the foundation pit as required for the above foundations) and including supply of Labour all materials like ,Cement, coarse and fine aggregates, shuttering, proper curing of the foundations/concrete and T&P in line with the Specification and as per direction of Engineer in Charge.	CUM	2,600.00				
6.1.3	Supply of Steel (FE 500 grade or above) of different size (as per design) with cutting, bending, binding in position of M.S.Rod for reinfocement of foundation concrete of Piles(Under reem Pile) including supply of binding wire (With supply of steel rod (TATA/RINL/SAIL make)	MT	146.00				
7	**FOUNDATIONS FOR TRANSFORMERS**						
7.1	**Design, engineering, supply of labour, material, equipments and construction of Auto-transformer/Power Transformer foundation including piling if any, all associated works, rail tracks, jacking pads,anchor block RCC and PCC, miscellaneous structural steel including oil collection pits, MS grating(if required), gravel filling, and other items etc. not mentioned herein, but specifically required for the completion of the work as per technical specification and approved drawing and this foundation should be connected with Main concrete road of the switch-yard . (Rate shall be inclusive of cement, reinforcement steel, angles,RS joists,Channels ,Rails ,flats and form work etc.)(all cement concrete shall have RCC ratio 1:1.5:3).This also includes excavation in all types of soil or rocks,backfilling,and disposal of excess earth as per the direction of Engineer In charge.**						

7.1.1	160 MVA, 220/132 KV Auto ransformer: Overal dimension of Transformer with Radiator. Total weight of Transformer as mentioned in Technical specification(Considering approximate foundation value)	Nos	2				
8	**OIL SUMP PIT**:Oil collection (from transformers)sump pit with provision of pump(5 HP, with auto level control , including cabling, fixing of control gear)as per CIGRE. As per spec and approved drawing. Oil capacity of each Transformer in ltrs appox. a) 160 MVA,220/132 KV	Nos	1				
9	**Fire wall:** Design, engineering, procurement of labour, material including all associated works for construction of fire-walls as per technical specification and approved drawings(column shall be RCC ratio1:1.5:3 and the walls are of fire resistant bricks).This also includes excavation in all types of soil or rocks,backfilling,and disposal of excess earth as per the direction of Engineer In charge. As per approved drawing and specification. Painting of the walls as per direction of the Site In charge	Nos	1				
10	**NCT FOUNDATION**: Design, engineering, procurement of labour, material including all associated works for construction of foundation NCT(also refer clause 1,1.1,&1.2) near Transformers and as per approved drawing and requirement and also as per the instruction of Engineer in charge. This also includes excavation in all types of soil or rocks,backfilling,and disposal of excess earth as per the direction of Engineer In charge.	Nos	2				

11	**STATION TRANSFORMER**:Design, engineering, procurement of labour,material including all associated works for construction of foundation and DP structure for station transformers 33/0.415 KV,250 KVA STN TRANSFORMER as per approved drawing and specification.33 KV AB Switch(600A),HG Fuse, DP Structure & Angles (duly painted),Chanels, Plinth for erection of the transformer, including fixing and laying of (insulators,surge arresters,XLPE armoured power cables3.5 core 300 sq mm,LT out door kiosk near transformers and other accessories for complete installation of transformer as per standard) and instruction of Engineer In charge. As per the specification and approved drawing.	Nos	2				

12	Cable Trenches: Design, engineering, and construction of RCC cable trenches and all associated works for cable trench and cable trench crossings as per technical specifications and approved drawings and as per direction of the Engineer in Charge including supply of all labour, T&P, materials. (1) This also includes excavation in all types of soil or rocks,back filling,and disposal of excess earth as per the direction of Engineer In charge. (2) Design, Engineering, Providing and laying of plain cement concrete (PCC 1:3:6) of grade M10 with approved quality coarse aggregates (Nominal size 12mm to 20mm) , fine aggregates, cement in column and equipment foundation as blind layer inclusive of labour charges for concrete mixing & curing. This includes supply of all labourers, T&P and dewatering wherever required as per Technical specification and instruction of Engineer In charge. (3) Open cast foundation for the cable trench with RCC: 1:1.5:3 (Grade M-20 Nominal mixing),including supply of Labour all materials like MS Rod(FE 500),Cement, coarse and fine aggregates,shuttering,cutting,bending,binding of M.S.Rod including supply of binding wire proper curing of the foundations/concrete and T&P in line with the Specification and as per direction of Engineer in Charge. (4) Fly ash brickwork with Fly ash brick ,plastering (!:6 Ratio) & curing, wherever required including the supply of labour,material, cement, etc. (5)Fabrication & Fixing of MS Angle(G.I) for cable tray support (as per specification). The cable tray support frame shall be pre fabricated GI angle as per requirement and to be welded with the plate fixed on the trench wall for better rigidity. The plate (6mm) fixed on the wall are also to be welded with the MS rods provided for the trench wall before concreting. (6) Precast of RCC covers (1:1.5:3) and its fixing on the cable trench as per spec and instruction of Engg. In Charge. (7) CABLE TRENCHES INSIDE THE CONTROL ROOM SHALL BE COVERED WITH M.S CHEQUERED PLATE(Duly painted as per instruction of Engg in charge) INCLUDING STANDARD SUPPORT STAND {HD Galvanised (M.S JOIST ,CHANNEL,ANGLE)}.						
12.1	Cable trench with covers						
12.1.1	Section 1-1	Mtrs	250				
12.1.2	Section 2- 2	Mtrs	300				
12.1.3	Section 3-3	Mtrs	50				
12.1.4	Section 4-4	Mtrs	50				

12.1.5	Cable trench for 132KV XLPE Cable 1000 sq.mm (1000 AMPS SINGLE CORE) (for 132 KV connectivity from GI equipment to Existing 132/33KV Dhenkanal Grid to GIS and to the Auto Transformer and other equipments etc.	Mtrs.	650				
12.2	**Cable trench crossing:Design,engineering,construction including supply of labour, materials, cement, reinforcement steel, form box etc,and all associated works for construction of trench crossing as per technical specification and approved drawing.**						
12.2.1	Road crossing for						
12.2.2	Section 1-1	Nos	1				
12.2.3	Section 2- 2	Nos	1				
12.2.4	Section 3-3	Nos	1				
13	**PCC before site surfacing :**Providing and supplying all labour, material, equipments etc. required for proper levelling of earth after erection of structures and equipments and proper compaction by using roller of adequate capacity(minimum 3 Ton capacity) with water sprinkling of switch yard area .After proper levelling of the switch yard area (after anti-weed treatment), spreading of plain cement concert with mixing ratio 1:3:6 (M10) and maintaining proper sloping for easy discharge of storm water having concrete thickness of 75 mm. including rolling , dressing, compacting,the area . As per technical specification and approved drawing, and as per the instruction of the Engg-in-Charge.This also includes excavation in all types of soil or rocks,backfilling,and disposal of excess earth as per the direction of Engineer In charge and approved drawing.	CUM	1200				
14	**METAL SPREADING IN THE SWITCH-YARD**						

14.1	Providing supplying and laying two layers of machine crushed metals (gravel) fill, the first layer after compaction shall make minimum 50 mm thickness coarse/ layer of 20 mm nominal size consolidated/ compacted and (by using roller as specified in the specification).A final layer of 50 mm thickness of machine crushed 20 mm nominal size of metals(gravel) above the first layer of 50 mm thickness and as per the technical specification and instruction of Engineer in charge above the PCC(1:3:6).The total compacted thickness of the metals(20 mm Nominal) 100mm above the PCC.	CUM	1200				
15	**Roads:** Design, construction of roads and walkways/ shoulders within sub-station as per specification, layout and approved drawings complete. This also includes excavation in all types of soil or rocks,backfilling,and disposal of excess earth as per the direction of Engineer In charge. Provision of drains on both the side of the roads for easy discharge of rain water.						
15.1	3.75 mtrs Concrete road with shoulder at both the side & shall have drain on both side of the road as per technical specification indicated in the civil section(Periphery roads outside switch yard fencing and colony roads)	MTRS	500				
15.2	7 mtrs concrete road with shoulder at both the side as per technical specification indicated in the civil section(from the switch yard main gate to all internal roads of the switch yard).Shall have drain on both side of the road.	MTRS	600				
15.3	7 mtrs wide Concrete roads with shoulder as per specification indicated in the civil section.(for main and approach roads).Shall have drain on both side of the road.	MTRS	100				
16	**Drainage system:Collection of rainfall data,** Design, construction of storm water drainage scheme, road-culverts, and drains crossing cable trenches etc. as per specification and approved drawing. This also includes excavation in all types of soil or rocks,backfilling,and disposal of excess earth as per the direction of Engineer In charge. All the switcyard bays , roads water drainage shall be connected to the main surface drain. As per approved drawing and specification.						
16.1	Storm water drain	MTRS	1000				
16.2	Road-culverts, drain crossings	MTRS	100				

16.3	Cable trench crossing	MTRS	50				
17	**Rain water harvesting** system as per Technical specification and approval of drawing and as per the direction of the Engineer in charge.	Nos	2				
18	**Switchyard fencing:** Providing and fixing of G.I chain link(2.5mm dia) fencing(the posts and links shall be of HD Galvanised) in switch yard and other areas of the substation with a total fence height complete as per specification and approved drawings, and as required under the safety regulation of local, state and central government bodies and as per instruction of the Engineer-in-Charge.(The PCC work for grouting the post shall be 1:2:4 and a continuous RR masonary work with ratio 1:5 and cement pointing of the joints, for the fencing upto a height of 350mm from the finished ground level) .This also includes excavation in all types of soil or rocks,backfilling,and disposal of excess earth as per the direction of Engineer In charge. The earthing of the fencing as per specification.	MTRS	650				
19	**MAIN & SWITCH YARD GATES**:Design, engineering, procurement of labour, material including all associated works for construction and fixing of of a main gate and one no. switch yard gates with men gates as per specification and approved drawing.This also includes excavation in all types of soil or rocks,backfilling,and disposal of excess earth as per the direction of Engineer In charge. Provision of gate lights (Post top lantern type) on each pillar of the gate. it includes supply & fixing of light fixtures including CFL lamp, LV XLPE cables, switchgear etc required to complete works as per specification and approved drawings						
19.1	**MAIN GATE(Special Designed type)**	NOS	1				
19.2	**WICKET GATE NEAR MAIN GATE**	NOS	1				
19.3	**SWITCH YARD GATE(ON BOTH SIDES OF 7MTRS. CONCRETE ROAD OF SWITCHYARD)**	NOS	2				
19.4	**WICKET GATE NEAR SWITCHYARD**	NOS	2				

20	**SECURITY SHED & CUM VISITOR ROOM**: Design, engineering, procurement of labour, material including all associated works for construction of Security shed near main gate,watch tower shed at the corners of switch yard as per the approved drawing and instruction of Engineer in charge.This also includes excavation in all types of soil or rocks,backfilling,and disposal of excess earth as per the direction of Engineer In charge. Internal electrification including supply of lighting fixtures,fan with regulators and provision of incoming AC supply from the main ACDB/outdoor kiosks installed for street light or colony quarters. Also includes painting of the building (in side and out side) as per recommended for colony building in the specification.						
20.1	**SECURITY SHED:**The size of the security shed shall be 3.5 mtrsX5mtrs and height of 3.5mtrs RCC roof,Fly ash Brick masonary works,plastering and painting and fixing of MS doors and windows. Internal concealed wiring (including supply of flexible copper FRP 1.1 KV PVC wire,conduits & its accessories,modular type switches & switch board,Junction boxes with required MCB & Earth leakage detector switcghear etc),fixing of lighting fixtures with lamps(LED Type) & switchgear ,ceiling fans of 1400 sweep and regulators(including supply) and provision of incoming AC supply from the main ACDB/outdoor kiosks installed for street light or colony quarters. Also includes painting of the building (in side and out side) as per recommended for colony building in the specification. (* REMARKS : FOR SUPPLY OF ALL THE CABLES AS INDICATED ARE COVERED IN THE supply)}	Nos	1				

21	**BORE WELL & PUMP HOUSE**:Design, engineering, procurement of labour, material including all associated works for construction of two nos. borewells for control room building including switch yard and colony quarters as per specification and approved drawing and instruction of Engineer in charge.This includes supply and fixing and commissioning of two nos 5 HP submersible water pump with starter and other protection. Construction of two nos pump house at ideal location for fixing of the electrical starter units. The pump house be of RCC roof and having walls of Brick masonary and plastering and painting with MS door having locking arrangement. The size of the room shall be 2.5mtrsX2.5 mtrs having height of 3 mtrs. as per approved drawing and specification. There shall be approach road to the pump house. This includes supply of materials,labours and T&P & excavation of all type of soils including rock and disposal of excess materials as per instruction of Engineer Incharge. Supply & laying of LV XLPE 3.5CX.35 sqmm cable from ACDB to pump house, control gear & earthing of the system etc to complete the scheme as per approved drawing & instruction of Engineer-in charge.	NOS	2				
22	**PLATFORM FOR STORING EQUIMENTS**:Design, engineering, procurement of labour, material including all associated works for construction of a platform for storing of bushings,Instrument transformers etc, as per specification and approved drawing.This also includes excavation in all types of soil or rocks,backfilling,and disposal of excess earth as per the specification,approved drawing and direction of Engineer In charge. One no platform outside the store shed RR masonry (compacted) with PCC at the top for storing the transformer bushings, Instrument transformers, transformer oil drums etc. The floor size of the platform shall be 15mtrX10 mtr with Galvanised Corrugated Sheet (Tata Make) top cover and associated MS supporting structure duly painted.	NOS	1				
23	**PROVISION OF PLANTATIONS**:Provision of plantation of 100 nos fruit bearing plants and 100 nos decorative plants at different locations, a garden in front of the control room including preparation of lawn, sypply of decorative plants like cactus etc.,soil treatment and its plantation including materials,labour and T&P. As per the instruction of Engineer in Charge and specification.	LOT	1				

24	**STONE PITCHING & TOE WALL:Stone pitching including making of toe walls both at top and bottom, including surface drain both at top and bottom and partition wall in every 10 mtrs by using boulders and RR masonry walls respectively. This also includes excavation in all types of soil or rocks,back filling,and disposal of excess earth and supply of materials and labour & T&P as per the direction of Engineer In charge and as per approved drawing and specification.**						
24.1	**Excavation in Soft & Loose Soil**	Cum	200				
24.2	**P.C.C (1:3:6): Lean Concrete Grade M-10**	Cum	50				
24.3	**RR Masonry (1:5)**	Cum	400				
24.4	**P.C.C (1:2:4): Lean Concrete Grade M-15**	Cum	25				
25	**STORE SHED**:Design, engineering, supply of all labour, T&P, material including all associated works for construction of store shed as per specification and approved drawing. This also includes excavation in all types of soil or rocks,back filling,and disposal of excess earth as per the specification,approved drawing and direction of Engineer In charge. One no store shed of floor size 10X10 mtr having Fly ash brick walls and plastering with RCC roof. The flooring shall be of 75 mm thickness PCC (mix ratio1:2:4) over RR masonry works (as per standard practice of flooring). Provision of adequate nos of MS racks (proper paintings also to be done as per the direction of site in charge) for keeping the spare materials. The height of the shed shall be 4mtrs above the plinth.	Lot	1				

26	**CONTROL ROOM BUILDING WITH RAMP:** Design, engineering and construction of switch yard buildings including the cost of all type of materials, supply of labour, cement, reinforcement- steel, form work and excavation as per the approved drawing and technical specification. **The column foundations shall be either shallow/open cast type or pile type foundation as per the site requirement** (The RCC structure frame should be in the ratio 1:1.5:3).This also includes excavation in all types of soil or rocks,back filling,and disposal of excess earth as per the direction of Engineer In charge. As per approved drawings and specification. This work including anti-termite treatment, plinth protection, DPC, peripheral drains, water supply, plumbing, sanitation, fire-fighting, electrification etc (one Double storied building having the GF: Store room,Bat room,Maint room, ACDB & DCDB Room, Toilets & stair case & etc, FF : SAS room, conference room,Office room,Transit rest room,toilets,pantry etc). Control Room Building Size: **25 mtrs X 15 Mtrs** The contractor shall finalize the dimensions of the hall & rooms according to the equipment offered by them providing enough space & access for erection, operation and maintenance & future expansion.						
26.1	RCC work including MS rods(FE500 and above grade) (including excavation, PCC, Shuttering, etc. for column ,Beams and roofs etc) as per technical spec & approved drawings.	Lot	1				
26.2	Fly ash brick masonry work in cement sand mortar 1: 6 with Fly ash bricks of class designation 75 as per technical spec & approved drawings.	Lot	1				
26.3	Flooring with double charged vitrified tiles with dado in all the rooms,Bath and toilets shall be provided with anti skid ceramic tiles(wall of the same also to be provided with ceramic tiles),Acid proof industrial tiles to be provided on the floor and wall of the battery room as per technical spec & approved drawings.	Lot	1				

26.4	External and internal wall painting with primer coat as per technical spec mentioned in the civil section. External: One coat weather coat primer + two coats of weather coat colour paint. Internal: Two coats wall putty+solvent thinable white primer of	Lot	1				
26.5	External and internal wall (External (18mm thk) and internal (12 mm thk) wall and ceiling plastering as per technical spec mentioned in the	Lot					
26.6	Provision of ceiling in the control room area as per specification mentioned in the civil section & approved drawings.	Lot	1				
26.7	Doors and windows shall be of sliding type with locking facility and shall be of aluminium with glaze of 6mm & windows shall have aluminium grills. Windows shall be provided with vertical window blinder to protect from the sun ray. As per technical spec & approved drawing.	Lot	1				
26.8	Provision of PHD and other fittings of reputed make for the control room building (in Toilets,wash room,overhead water tank of adequate capacity etc) of reputed make,provision of rain water discharge pipes at	Lot	1				
26.9	Internal concealed wiring (including supply of flexible copper FRP 1.1 KV PVC wire,conduits & its accessories,modular type switches & switch board,Junction boxes with required MCB & Earth leakage detector switcghear etc),fixing of lighting fixtures & switchgear ,ceiling fans of 1400 sweep and regulators(including supply) ,exhaust fan (including supply), Erection of all Lighting FIXTURES & LAMPS (LED), D.C emergency lighting (including supply), as per approved drawing and direction of Engineer In charge.	Lot	1				
26.10	Supply, fitting and fixing of stainless steel pf 304 grade in hand railing using 50mm dia of 2mm thick circular pipe with balustrade of size	Lot	1				
26.11	Installation of smoke and heat detection system of the building.	Lot	1				

27	**Construction of township/colony (**residential quarters) for staff and employees of the employer. Layout, design, survey, levelling, site dressing and clearing of the area, soil investigation, excavation, PCC, RCC, Fly ash Brick work, plastering ,flooring(flooring shall be with vitrified tiles of reputed make with a dado of minimum6 inches),fixing of doors windows and window grills, including all labour, T&P, material like cement ,sand aggregate, Fly ash Bricks, reinforcements etc with all bought items required for completion of the quarters as per approved construction drawings with all facilities for supply of drinking water. The outer paint shall be applied with weather coat synthetic enamel paint as per the standard practice of application and the inner paint shall be applied with distemper of approved quality as per the instruction and approval of the same by OPTCL. This also includes excavation in all types of soil or rocks,back filling,and disposal of excess earth as per the direction of Engineer In charge. Internal electrical wiring with fixing of light fixtures and fans with electronic regulators and exhaust fans as per technical specification and approved drawing. Construction of over head RCC tank(1000 ltrs capacity one for each quarters), sewerage disposal and connection with main sewerage/ septic tank and soak pit, storm water and surface drainage, culverts, roads, with suitable radius on the curves and its connection with main road the substation, street lighting, internal lighting, internal plumbing and sanitation including internal/external finishing of quarters etc. required for completion of the town ship. (RCC column structure frame and the Fly ash Bricks to be used shall be fly ash Fly ash Brick, all the door and window frame & panels shall be aluminium with adequate size as indicated in the TS and also as per the National Building Code adopted.						
27.1	**"D" type Quarter As per technical specification: 1 no quarter on ground floor & the size of quarter plinth area shall be 120 Sq Mtrs(appox)**	SQ.MTRS	120				
27.2	**"E" type Quarter As per technical specification (one no. two storied flat. Each flat shall be with 2 nos quarters on ground floor & 2 Nos quarters on 1st floor).(There shall be 4 Nos quarters to be accommodated in one flat as E1,E2,E3 & E4)**						

27.2.1	**"E" type Quarter As per technical specification: 2 nos quarters on ground floor (Each quarter size plinth area shall be 73 Sq Mtrs(appox)**	SQ.MTRS	146				
27.2.2	**"E" type Quarter As per technical specification: 2 nos quarters on first floor(Each quarter size plinth area shall be 73 Sq Mtrs(appox)**	SQ.MTRS	146				
	TOTAL OF CIVIL WORKS (PART-A)						
PART B	**ELECTRICAL WORKS**						
1	**3150A, 50kA for 3s, Double Busbar Circuit Breaker (Circuit breaker shall be E2-C2-M2 class as per IEC 62271-100) arrangement.245kV OUTDOOR GIS EQUIPMENT as per latest IEC standard & type tested equipment as per technical specification, with open future proof & flexible system in line with IEC 61850 & IEC 62271-203.**						
1.1	245kV, 3150A, 50kA for 3 sec (Busbar, CB, Disconnector, Grounding Switch & CT), SF6 gas insulated **Transformer Feeder Bay** Module each comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Motorised Busbar 3 Phase Disconnector (2 Nos), Motorised Disconnector (1 No), Motorised safety Grounding switch (3 Nos), Local Control Cubicle, SF6 gas monitoring system for complete bay, SF6 bus duct termination arrangement (3 Nos), PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete ICT Feeder Bay Module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification(Price of the	Set	**2**				

1.2	245kV, 3150A, 50kA for 3 sec (Busbar, CB, Disconnector, Grounding switch, CT & PT), SF6 gas insulated **Line Feeder** Bay Module each comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Single phase Line Potential Transformer (4 winding) (3 Nos), Motorised 3 Phase Busbar Disconnector (2 Nos), Motorised safety Grounding switch (2 Nos), Motorised 3 Phase Disconnector with high speed fault making Motorised Grounding switch (1 No), Local Control Cubicle, SF6 gas monitoring system for complete bay, SF6 bus duct termination arrangement (3 Nos), PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete Line Feeder Bay Module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any	Set	**4**				
1.3	245kV, 3150A, 50kA for 3 sec (Busbars, Disconnector, Grounding switch & bus PT), 1 Phase Isolated Bus-PT Bay Module comprisig of SF6 gas insulated metal enclosed busbars each enclosed in bus enclosures running along the length of the switchgear to interconnect each of circuit breaker bay module. Each busbar set shall be complete with Single phase bus Potential Transformer (4 winding) (3 Nos), Motorised 3 Phase Disconnector (1 No) , Motorised Busbar safety Grounding switch (1 No), Local Control Cubicle, SF6 gas monitoring system PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete the bus & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical	Set	**1**				

1.4	245kV, 3150A, 50kA for 3 sec (CB, Disconnector, Grounding switch & CT), SF6 gas insulated **Bus Coupler** Bay Module comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Motorised 3 Phase Disconnector (2 Nos), Motorised safety Grounding switch (2 Nos), Local Control Cubicle, SF6 gas monitoring system, PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete Bus Coupler Bay Module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.	Set	**1**				
1.5	245kV, 3150A, 50 kA, 3 sec, single phase, SF6 gas Insulated Bus Duct outside GIS Bay along with associated Support structure arrangement bends, joints,accessories, & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.	RM	**700**				
1.6	245kV, 3150A, 50kA SF6/Air BUSHING (Bushing shall be of Polymer / composite insulator type and shall be seamless sheath of a silicone rubber compound. The hollow silicone composite insulators shall comply as per IEC 61462 and IEC 62217. The design of the composite insulators shall be tested and verified according to IEC 61462) FOR CONNECTING GIS TO AIS along with support structure.	No.	18				

1.7	Portable Partial Discharge Monitoring System (PDM): 245kV system shall have Portable Partial Discharge Monitoring System (PDM) & shall be capable for measuring PD in charged GIS environment, bandwidth in order of 100MHz–2GHz & provision to select a wide range of intermediate bandwidths and the principle of operation shall be based on UHF principle of detection. The Detection and measurement of PD and bouncing particles having in built large coloured LCD for displaying and storing facility in the instrument for further analysis to locate actual source of PD such as free conducting particles, floating components, voids in spacers, particle on spacer surfaces etc.	Set	**1**				
2	**2000A, 40kA for 3s, Double Busbar Circuit Breaker (Circuit breaker shall be E2-C2-M2 class as per IEC 62271-100) arrangement.** **145kV OUTDOOR GIS EQUIPMENT as per latest IEC standard & type tested equipment as per technical specification, with open future proof & flexible system in line with IEC 61850 & IEC 62271-203.**						
2.1	145kV, 2000A, 40kA for 3 sec (Busbar, CB, Disconnector, Grounding Switch & CT), SF6 gas insulated Transformer Feeder Bay Module each comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Motorised Busbar 3 Phase Disconnector (2 Nos), Motorised Disconnector (1 No), Motorised safety Grounding switch (3 Nos), Local Control Cubicle, SF6 gas monitoring system for complete bay, SF6 bus duct termination arrangement (3 Nos), PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete ICT Feeder Bay Module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences)	Set	2				

2.2	145kV, 2000A, 40kA for 3 sec (Busbar, CB, Disconnector, Grounding switch, CT & PT), SF6 gas insulated Line Feeder Bay Module each comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Single phase Line Potential Transformer (4 winding) (3 Nos), Motorised 3 Phase Busbar Disconnector (2 Nos), Motorised safety Grounding switch (2 Nos), Motorised 3 Phase Disconnector with high speed fault making Motorised Grounding switch (1 No), Local Control Cubicle, SF6 gas monitoring system for complete bay, SF6 bus duct termination arrangement (3 Nos), PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete Line Feeder Bay Module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any	Set	**2**				
2.3	145kV, 2000A, 40kA for 3 sec (Busbars, Disconnector, Grounding switch & bus PT), 1 Phase Isolated Bus-PT Bay Module comprisig of SF6 gas insulated metal enclosed busbars each enclosed in bus enclosures running along the length of the switchgear to interconnect each of circuit breaker bay module. Each busbar set shall be complete with Single phase bus Potential Transformer (4 winding) (3 Nos), Motorised 3 Phase Disconnector (1 No) , Motorised Busbar safety Grounding switch (1 No), Local Control Cubicle, SF6 gas monitoring system PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete the bus & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro magnetic interferances) as per the technical	Set	**1**				

2.4	145kV, 2000A, 40kA for 3 sec (CB, Disconnector, Grounding switch & CT), SF6 gas insulated Bus Coupler Bay Module comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Motorised 3 Phase Disconnector (2 Nos), Motorised safety Grounding switch (2 Nos), Local Control Cubicle, SF6 gas monitoring system, PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete Bus Coupler Bay Module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the	Set	**1**				
2.5	Portable Partial Discharge Monitoring System (PDM): 145kV system shall have Portable Partial Discharge Monitoring System (PDM) & shall be capable for measuring PD in charged GIS environment, bandwidth in order of 100MHz–2GHz & provision to select a wide range of intermediate bandwidths and the principle of operation shall be based on UHF principle of detection. The Detection and measurement of PD and bouncing particles having in built large coloured LCD for displaying and storing facility in the instrument for further analysis to locate actual source of PD such as free conducting particles, floating components, voids in spacers, particle on spacer surfaces etc.	Set	**1**				
3	**245 KV,2000A,40KA,ISOLATORS**						
3.1	245 KV, 2000A, 40KA, Center break ISOLATORS WITH EARTH SWITCH	NOS	4				
4	216 KV, METAL OXIDE SURGE ARRESTOR,10 KA, class III	NOS	18				
5	220 KV Bus Post Insulators	NOS	6				
6	**145 KV,1250A,31.5KA,ISOLATORS**						
6.1	145 KV, 2000A, 40KA, Center break ISOLATORS WITH EARTH SWITCH	NOS	2				
7	120 KV METAL OXIDE SURGE ARRESTOR, 10 KA, Class III	NOS	12				

8	30 KV, METAL OXIDE SURGE ARRESTOR, 10kA, Class II (AIS) as per technical specification.	NOS	9				
9	**BUS-BAR STRINGING**						
9.1	**Supply of labour,T&P and other necessary arrangements for stringing of bus bar conductors,hoisting of single or double insulator strings,Single or Double Hard-wares Fittings, Clamp & connectors, as per requirements, Jumpers,connectionsEquipments,testing,commissioning etc. as per the instruction of Engineer-in charge.**						
9.1.1	ACSR Moose(Single)	Per Mtr.	900				
9.1.2	Twin Conductor /Phase/Mtr.	Per Mtr.	1000				
12	Laying and termination of EHV/HV XLPE Power copper conductor cable for the GIS system as per IS7098 & IEC60840 including installation of indoor & outdoor cable termination kit and associated cable accessories & clamps as per technical specification and direction of Engineer-in -charge.						
12.1	132KV XLPE Copper Cable **1000 sq. mm** Single Core (from 132 KV GIS to 132KV Gantry) including installation of indoor & outdoor cable termination kit	**Mtrs**	3000				
12.2	33KV XLPE Copper Cable **300 sq. mm** Single Core (For connectivity to Station Transformer) including installation of indoor & outdoor cable termination kit	**Mtrs**	1000				
13	**EARTH WIRES & IT'S HARDWARES & FITTING**						
13.1	Earthing Spikes of 9 mtr long each and Its Fittings in all respect. (220 kv side)	NOS	5				
13.2	Earthing Spikes of 7 mtr long each and Its Fittings in all respect. (132 kv side)	NOS	3				

14	**SUB-STATION EARTH-MAT** Substation earth-mat Design, engineering, supply inclusive of corrosion protection measures if any,laying of earth-mat conductors of Hot dip galvanized flats of size 75X10mm to the approval of Project Manager, excavation, welding/jointing ,application of two coats of bituminous Paint,wrapping of HT Tape etc of ground conductors along with risers (of size 50X6 mm GI flats) etc back filling and good compaction,grounding driven rods(40 mm MS solid rod),perforated GI pipes for treated earth pits(with details of treatment as per IS). The spacing between the earth conductor not more than 5 mtrs(both way) and to be buried at depth of 700mm from the finished ground level. For provision of treated earth-pit and untreated earth pit, refer the specification for designing. Provision of water taps inside the switch yard areas and peripheral treated and un-treated earth pit are required to be provided for watering the treated earth pits. The no. of treated and un treated earth pits are to be done as per the practice and as indicated in the drawing for different equipments. This is as per approved drawing and specification.						
14.1	75X10 mm GI Flat	Mtr.	8000.000				
14.2	Connection of Earthing Riser of size 50X6 mm **GI Flat**	Mtr.	1634.000				
14.3	50MM GI PIPE FOR TREATED EARTH PIT ELECTRORDE WITH CHAMBER AND COVER	Nos.	50				
14.4	40 MM MS ROD FOR NON-TREATED EARTH PIT ELECTORDE	Nos.	120				
15	G.I Cable Trays including support GI angle suitable for different sections i.e. Section:1-1,2-2,3-3 & 4-4 along with its accessories as per TS.						
15.1	G.I Cable Trays(size: 450x75x2500mm)	MTRS	2000				
15.2	G.I Cable Trays(size: 300x75x2500mm)	MTRS	2500				
15.3	G.I Cable Trays(size: 150x75x2500mm)	MTRS	2000				
15.4	Support G. I angle 50x50x6 mm for cable tray	MT	4				
16	SUB STATION SWITCYARD BMK,AC CONSOLE & OTHER MARSHALLING BOXES						
16.1	BAY MARSHALLING KIOSK ***(02 Nos. in 220 KV Bay,01 Nos. in 132 KV Bay BAY)***	NOS	3				

16.2	SWITCH YARD AC CONSOLE FOR LIGHTING ***(01 Nos. in 220 KV bay, 01 No. in 132 kv Bay)***	NOS	2				
16.3	SWITCH YARD RECEPTACLE BOARD FOR TFR OIL FILTERATION ***(01 No. near each 220/132 Auto Transformers)***	NOS	2				
16.4	SWITCH YARD RECEPTACLE BOARD FOR WELDING & OTHER EMERGENCY ***(01 No.)***	NOS	1				
16.5	CVT Out door console boxes (CVT = 220KV - 4nos., 132KV-2)	NOS	6				
16.6	Apex meter panel	NOS	1				
16.7	0.2 Class ABT Compliant Apex energy Meter.	NOS	4				
17	**ERECTION OF SWITCH YARD STRUCTURES (LATTICE TYPE FOR COLUMN & BEAMS AND PIPE TYPE FOR ALL EQUIPMENT) FOR 220KV & 132KV CLASS INCLUDING FOUNDATION BOLTS & NUTS.**						
17.1	**DIFFERENT TYPES OF COLUMNS WITH DETAILS**						
17.1.1	P1S-220 KV (NOMINAL UNIT WT- 4.5 MT)- **5 NOS)**	MT	22.500				
17.1.2	T1S 132KV (NOMINAL UNIT WT-1.2MT (3 NOS.)	MT	3.600				
17.2	**DIFFERENT TYPE OF BEAMS WITH DETAILS**						
17.2.1	Q1-220KV (NOMINAL UNIT WT- 1.5 MT) (4 NOS.)	MT	6.000				
17.2.2	G1 - 132KV (NOMINAL UNIT WT-0.62MT) (NOS)	MT	1.240				
17.3	**TOTAL WEIGHT OF COLUMN & BEAMS**	**MT**	**33.340**				
17.4	**ERECTION OFEQUIPMENT SUPPORT STRUCTURES (LATTICE TYPE) FOR ALL 220KV & 132 KV EQUIPMENTS INCLUDING FOUNDATION BOLTS & NUTS**						
17.4.1	ISOLATORS-220KV (SI with E/S 4 Nos.)	MT	5.084				
17.4.2	ISOLATORS-132KV (SI with E/S-2 Nos.)	MT	1.318				
17.4.3	CVTS-220 KV (12 Nos.)	MT	2.652				
17.4.4	CVTS-132 KV (6 Nos)	MT	1.344				
17.4.5	Surge Arrester-220 KV(18 Nos.)	MT	5.258				
17.4.6	Surge Arrester-132 KV(12 Nos.)	MT	3.288				
17.4.7	BPI-220 KV (6Nos.)	MT	13.469				
17.4.8	Cable Termination Port -132 KV (12Nos)	MT	4.200				

17.5	**TOTAL WEIGHT OF EQUIPMENT STRUCTURES**	**MT**	**36.612**				
17.6	**Total weight of GI Nuts and Bolts for Columns, Beams & Equipment Structures**	**MT**	**1.831**				
18	**GENERAL EQUIPMENT & SUBSTATION ACCESSORIES**						
18.1	**POWER CABLES,1.1KV,XLPE & PVC ARMOURED, ALUMINIUM CONDUCTOR (As per Specification)**						
18.1.1	XLPE 3.5 CX185 mm^2	MTR	500				
18.1.2	XLPE 3.5 CX120 mm^2	MTR	500				
18.1.3	PVC 3.5 CX70 mm^2	MTR	300				
18.1.4	PVC 3.5 CX35 mm^2	MTR	500				
18.1.5	PVC 4 CX 16 mm^2	MTR	1000				
18.1.6	PVC 4CX 6 mm^2	MTR	1000				
18.1.7	PVC 2CX 6 mm^2	MTR	2000				
18.2	**CONTROL CABLES,1.1 KV, PVC,STRANDED COPPER(As per specification)**						
18.2.1	4 CX 2.5 mm^2	MTR	6000				
18.2.2	5 CX 2.5 mm^2	MTR	4000				
18.2.3	7CX 2.5 mm^2	MTR	5000				
18.2.4	10 CX 2.5 mm^2	MTR	10000				
18.2.5	12 CX 2.5 mm^2	MTR	5000				
18.2.6	16 CX 2.5 mm^2	MTR	2000				
18.2.7	19 CX 2.5 mm^2	MTR	2000				
18.2.8	1CX 120 mm^2 BAT TO BAT CHARGER & CHARGER TO DCDB	MTR	300				
19	**ACCESSORIES FOR PLCC SYSTEM With OPGW cable**						
19.1	48 Fibre Optic Approach cable along with HDPE Pipes	KM	0.50				
19.2	Optical line Terminal Equipment(OLTE) -STM4 type SDH equipment with integrated MUX & tributary cards for speech & data ports for interfacing of Speech & data which should be compatible with existing OPTCL system	No	1				
19.3	Digital Teleprotection Equipment and accessories to be suitable for interfacing with SDHMUX	No	1				

19.4	Supply of FODP(Fibre Optic Distribution Panel)48 F: Indoor type,rack mounted with FCPC coupling and pig tails(DWSm Fibre)	No	1				
19.5	48 V, 300 AH, maintenance free VRLA Battery set.	Set	1				
19.6	SMPS based Battery Charger of 75A suitable for 48V VRLA Battery set	No	1				
19.7	2.5 sq. mm muti strand 2 core control cable(power supply,Transducer/MFT PT supply)	Metre	300				
19.8	2.5 sq. mm multi strand 4 core control cable(Transducer/MFT CT supply)	Metre	300				
19.9	1.5 sq. mm multi strand 10 core control cable(Digital Input)	Metre	200				
19.10	10 sq. mm 2 core multi strand control cable(Battery)	Metre	100				
19.11	48V DCDB	Set	1				
19.12	Earth Flat, Cable Tray, Telephone cable, Foundation rail, Junction Box,.	Lot	1				
20	**ERECTION,FILTERATION,TESTING & COMMISSIONING OF POWER TRANSFORMER & ITS OTHER RELATED ACCESSORIES**						

20.1	ERECTION OF THE TRANSFORMERS AND ITS ACCESSORIES ON THE PLINTH AND PLACING IN POSITION, ERECTION OF ACCESSORIES OF THE TRANSFORMERS, EART-HING AS PER STANDARD(INCLUDING SUPPLY OF MATERIALS),VACUUM TREATMENT OF THE TANK AND WINDING,OIL FILTRATION(INCLUDING SUPPLY OF VACUUM CUM OIL FILTER MACHINE),SUPPLY & LAYING OF ALL TYPES OF CONTROL & POWER CABLES PERTAINING TO TRANSFORMERS ,TESTING AND COMMISSIONING INCLUDING ALL TESTS OF THE OILS AS PER STIPULATION IN THE STANDARD APPROVED TESTING LABORATORY AND AS PER THE INSTRUCTION OF THE ENGINEER IN CHARGE.THIS INCLUDE ALL RELATED WORKS FOR ERECTION,TESTING AND COMMISSIONING OF THE POWER TRANSFORMERS.(CONTRACTOR TO ARRANGE POWER SUPPLY FOR FILTRATION AND VACUUM TREATMENT WORKS).IT ALSO INCLUDES SUPPLY OF ALL MATERIALS FOR ERECTION INCLUDING T&P's. **160MVA, 220/132/33KV Auto Transformer-**	NOS	2				
20.2	STATION TRANSFORMER 33KV/0.43 V,500 KVA (Confirming to Energy Efficiency Level 2 -AS PER SPECIFICATION & relevant IS)	NOS	2				

20.3	**One no. 4 pole structure (HDG Type) alongwith other equipment & materials for two nos station transformers:** 1.4 Pole structure (using 200X100 mm RS Joist) 2. Channel & Angle FOR BRACING OF, CHANNEL for the SA & Isolator & HG fuse etc. 3. 90 KN Disc/composite long rod Insulators for 33 KV (48 nos./12 sets) for bus, Bus stringing using ACSR moose conductor & tension hardwares,other clamps & connectors etc as per requirement. 4. 2sets of 33 KV Isolator (800 AMP) for 33 KV side of station trafo. 5. 2sets of 33 KV HG FUSE. 6. 100 Sq mm AAAC conductor suitable for connection between HG fuse & station transformer bushing. 7. 2 sets of LT OUT DOOR KIOSK MADE OUT OF 3mm CRCA sheet GI MARSHALLING BOX suitable for outdoor mounting. The bus bar suitable for 1000 AMP shall be arranged in the out door kiosk and other Facility like two sets of 400 Amps MCCB for incoming & outgoing with required sizes of terminal studs for power cable termination & any other accessories required. AII materials shall be As per relevant latest IS & as per the direction of Engg. in charge	SETS	2				
21	**Switch yard lighting:** Design, engineering, procurement of labour, material including all associated works for construction of switch yard lightings as per technical specification and approved drawings. The fixture shall be of reputed make (Philips/CGL/Bajaj/ other approved make of OPTCL) and fixtures shall be metalhalide lamps and proper cabling from the lighting outdoor distribution boards to the junction boxes and from junction boxes to the fixtures. The lighting fixtures are to be installed on the switch yard structures. The quantity of such fixtures are to be designed and to be ascertained.						
21.1	**SUB-STATION SWITCH YARD LIGHTING :** IT INCLUDES SUPPLY OF FIXTURES & LAMPS (LED) of reputed make	SET	60				

21.2	**STREET LIGHTING**: GI Tubular Pole: (410-SP-24: IS 2713-Part-II-1980 or latest) Length of pole 8.5 mtrs(minimum weight 158 Kgs). & LED light fittings etc. (ALL THE STREET LIGHT POLE SHALL BE OF GI TUBULAR POLE AND PROVISION OF A GI JUNCTION BOX WITH SUITABLE COVERS AT A HEIGHT OF 1 METRE FROM THE GROUND. THE JUNCTION BOX SHALL HAVE PROVISION OF FUSES, BUSES, CONNECTORS FOR CABLE IN AND OUT. (IT INCLUDES SUPPLY OF LED LIGHTING FIXTURES WITH LAMPS of 100 Watts of reputed make (Philips/CGL/Bajaj/other approved make of OPTCL) & as per technical specification. (* REMARKS : FOR SUPPLY OF ALL THE CABLES AS INDICATED ARE COVERED IN THE CABLE ITEMS AS INDICATED ABOVE)	SET	25				
21.3	**OUTDOOR KIOSK (HDG type) FOR STREET LIGHTING PURPOSE** HAVING 2 NOS 200 AMP SWITCH FUSE UNITS AND , 6 NOS.OUT LETS OF 32 AMP MCB FOR STREET LIGHTING. (SUITABLE FOR XLPE CABLES(3.5 CORE 120 SQMM) FROM MAIN ACDB FROM CONTROL ROOM TO THE OUT DOOR KIOSK. XLPE CABLE OF 4C X 16 SQMM FROM OUTDOOR KIOSK TO THE STREET LIGHT POLES AND 4CX6 SQMM FROM POLE TO POLE AND 2CX6 SQMM FROM POLE TO LIGHTING FIXTURES. > 1 NO. OUTDOOR KIOSK FOR COLONY SUPPLY PURPOSE HAVING (* REMARKS : FOR SUPPLY OF ALL THE CABLES AS INDICATED ARE COVERED IN THE CABLE ITEMS AS INDICATED ABOVE)	SET	2				
21.4	40 Mtrs heigh Monopole (HDG) Lighting cum Lightning Mast including LED lighting fixtures (**240 watts each minimum 8 Nos**.) with control gear panel etc suitable for wind zone-V , with all other accessories like motor for hoisting/lowering the lighting platform & other switchgear and lighting control panel including required cable(copper) & other accessories etc.	SET	2				
22	2 TR CAPACITY SPLIT AIR CONDITIONING UNITS WITH REMOTE CONTROL FACILITY: INCLUDING SUPPLY OF 5 star rated AIR CONDITIONERS, Automatic Voltage Stabiliser,CONTROL BOXES ETC FOR COMPLETING THE A.C SCHEME.(AS PER SPECIFICATION) FOR CONTROL ROOM, CARRIER ROOM & CONFERENCE ROOM.,OFFICE ROOM etc which includes all type of cables & wires and a main control switch gear kiosk having sufficient outlet for each air conditioner unit.	SET	20				

23	**FIRE FIGHTING SYSTEM(PORTABLE AND WHEEL MOUNTED SETS FOR CONTROL ROOM,EQUIPMENT LIKE TRANSFORMER AND OTHER AREAS AS PER TECH SPEC(REFER TS-INST TO BIDDER BEFORE DESIGN-SL NO 16-ANNEXURE - I)**						
23.1	FOAM TYPE-9 LTRS	NOS	5				
23.2	DRY CHEMICAL POWDER(TROLLEY MOUNTED)- 22.5 KGS	NOS	6				
23.3	DRY POWDER TYPE - 5 KGS	NOS	6				
23.4	CO_2 - 4.5 KGS	NOS	6				
23.5	CO_2 - 9 KGS	NOS	6				
23.6	CO_2 (TROLLY MOUNTED)- 22.5 KGS	NOS	4				
23.7	9 litre Water type	Nos.	4				
23.8	50 Litres Mechanical Foam type	Nos.	2				
23.9	FIRE BUCKET (6 NOS IN EACH STAND) WITH STAND	SET	5				
24	**SUBSTATION AUTOMATION SYSTEM** FOR 220/132 KV SUBSTATION ON PRP MODE: Design , engineering , drawing, supervision, installation , testing & commissioning of Substation Automation system alongwith Supply of the following 220 and 132 kV level of protection panels consisting of Bay control Units & numerical protection relays and other auxiliary relays suitable for SAS as per technical specification. (**220KV side:** COMPRISING OF 04 Nos. FEEDER BAYS + 02 TRANSFORMER BAYS + 01 Nos BUS COUPLER BAY & **132 KV side:** COMPRISING OF 02 Nos. FEEDER SAYS + 02 Nos TRANSFORMER BAYS + 01 No. BUS COUPLER BAY) **NOTE:** All protective relays & BCU shall be numerical type.						
24.1	Yard AC Kiosk :5000 mm (L)x4000mm (W)x 3300mm (H) with AC, **as per the Specification;**	Nos.	3				

24.2	Gate way panel for Sub-Station Automation (in PRP as per the specification & indicative drg) system (for All 220 & 132 KV side bays including the future bays),other accessories (comprising servers, engg. Station, works station (Main & standby), Remote station control, Colour Laser jet Printers & dot matrix printer for local station as per requirement and also for remote station, Ethernet Switches , LIU, Red Box, Multimode glass fibre Doublle jacket armoured optical cables, special cables like F.O patch cord & armoured FO cables of adequate length etc required for the system in all respect as per latest IEC 61850 standard, Inverters of required capacity & rating (3KVA-Input shall be both A.C & D.C and output shall be A.C) etc as per TS. A Full HD LED screen of 70 inches for display,SAS furnitures of Godrej make & including all type of accessories & as per technical specification.	SET	1				
24.3	**BCU for Substation Auxilliary** System (Datas for monitoring of Station AC, Station DC, Lighting, Fire fighting, Air conditioning, Diesel generator etc. as per the site requirement)	SET	1				
24.5	GPS System with PTP, IRIG-B, SNTP	SET	1				
24.6	**220 KV SIDE PROTECTION & OTHER PANELS**						
24.6.1	**FEEDER PROTECTION PANEL** (MAIN-I , MAIN-II & BACK-UP PROTECTION WITH AUTO RECLOSURE DISTANCE PROTECTION	NOS	2				
24.6.2	**TRANSFORMER PROTECTION PANEL** (DIFFERENTIAL I , REF I & BACK-UP PROTECTION & BCU for 220 KV side) & (Bay control unit-BCU for 132 KV side) CONSIDERING HV & LV side of 220/132 KV, 160 MVA Auto transformer with all other relays & component required for complete prtection,control etc as per TS and also suitable for substation automation system.	NOS	2				
24.6.3	**BUS COUPLER PROTECTION PANEL** with Bay control unit (BCU) & Back-up protection relay with with all other relays & component required for complete prtection,control etc as per TS and also suitable for substation automation system.	NOS	1				
24.6.4	**BUS-BAR PROTECTION PANEL** (Provision of bus bar modules for the future bays(two nos) and with with all other relays & component required for complete prtection etc as per TS and also suitable for substation automation system.	SET	1				
24.7	**132 KV SIDE PROTECTION PANELS**						

24.7.1	132KV FEEDER PROTECTION PANEL (MAIN-I & BACK-UP PROTECTION DISTANCE PROTECTION with Bay control unit (BCU) for substation automation system. (b) Supply of Main-I Line differential Protection only along with all other accessories required for succesful operation between Dhenkanal-A & Dhenkanal-B .	NOS	6				
24.7.2	**132 KV BUS COUPLER PROTECTION Panel** with Bay control unit (BCU) with with all other relays & component required for complete prtection,control etc as per TS and also suitable for substation automation system.	NOS	1				
25	**AC & DC SYSTEM**						
25.1	**AC SYSTEM**						
25.1.1	MAIN ACDB,(HAVING 800A, 50KA, DRAWOUT TYPE ACB WITH 3 O/C,E/F,U/V RELAYING FACILITY INDOOR TYPE AS PER SPECIFICATION.(MAIN DB-1,MAIN DB-2 WITH B/C)	SET	1				
25.1.2	ACDB (HAVING 400A MCCB) AS PER SPECIFICATION (ACDB-1, ACDB-2 WITH B/C)	SET	1				
25.1.3	MAIN LIGHTING DISTRIBUTION BOARD (HAVING 250A MCCB AS INCOMER)AS PER SPECIFICATION (WITH DB-1,DB-2 & B/C)	SET	1				
25.1.4	INDOOR LIGHTING DISTRIBUTION BOARD AS PER SPECIFICATION. (WITH DB-1,DB-2 & B/C)	SET	1				
25.1.5	EMERGENCY LIGHTING DISTRIBUTION BOARD	SET	1				
25.1.6	INDOOR RECEPTACLE BOARD	SET	1				
25.2	**DC SYSTEM**						
25.2.1	220 V DCDB (HAVING 100A DC MCCB AS INCOMER, E/F (EARTH LEAKAGE), UNDER & OVER VOLTAGE AS PER SPECIFICATION (DC DB-1,DC DB-2 & B/C)	SET	1				
25.2.2	220 V DC EMERGENCY DISTRIBUTION BOARD	SET	1				
26	BATTERY (350 AH PLANTE TYPE) FOR 220 V DC	SET	2				
27	BATTERY CHARGER FOR 220 V, 350 AH PLANTE TYPE BATTERY (FLOAT AND FLOAT CUM BOOST)	SET	2				
28	DISTILLED WATER PLANT OF 10 LTR/HR FOR BATTERY BANKS	SET	1				
29	WALKIE TALKIE SET	SET /PAIR	2				

30	PORTABLE ALUMINIUM LADDER EXTENDABLE TYPE OF ADEQUATE HEIGHT TO BE USED FOR MAINTENANCE OF EQUIPMENT INSIDE SWITCH YARD.	NOS	2				
31	PEDESTAL MOUNTED WHEEL FITTED DERRICK FOR LIFTING/ LOWERING OF MATERIALS UP TO 1.5 TON CAPACITY.	SET	1				
32	WATER COOLER WITH WATER PURIFIER SYSTEM	NOS	2				
33	MAINTENANCE TESTING EQUIPMENT (AS PER **ANNEXURE - I** ,INDICATED IN TS-TIMK-SCHEDULE OF REQUIREMENTS OF MAINTENANCE EQUIPMENT)	LOT	1				
34	OTHER TOOLS AND PLANTS (T&P's) REQUIREMENT (AS PER **ANNEXURE - II** ,INDICATED IN TS-TIMK-SCHEDULE OF REQUI-REMENTS OTHER T&P's)	LOT	1				
35	OFFICE FURNITURE (AS PER **ANNEXURE - III** ,INDICATED IN TS-TIMK-SCHEDULE OF REQUIREMENTS OFFICE FURNITURE)>PLACING IN CONTROL ROOM,CONFERENCE ROOM,OFFICE ROOMS,LIBRARY,TESTING LAB,etc.	LOT	1				
36	BEST QUALITY &APPROVED MAKE INSULATING MAT (Confirming to IS:15652:2006) TO BE KEPT INFRONT OF ALL PANELS,BOARDS ETC.(2000X1000X3)mm Size	NOS	50				
37	**COLOUR CODING, BAY MARKING Etc**:Design, engineering, procurement of labour, material including all associated works for the followings. This should be as per direction of site In charge. a)Color coding (red,Yellow & Blue) for equipments,Bus gantry &column of entire switch yard. Good quality weather proof sticker may be used for identification. b)Each bay should be identified with the help of bay marker sign board, suitably grouted. MS sign board with stand to be installed. Proper painting and lettering to be done of the entire switch yard area.	Lot	1				
	TOTAL OF ELECTRICAL WORKS (PART-B)						
	TOTAL OF ERECTION OF SUBSTATION (Electrical Work) & (Civil Work) -Schedule-4-ss (to Schedule No. 6 Grand Summary)						

1 Specify currency in accordance with specifications in Bid Data Sheet under ITB 19.1 in Single-Stage Bid, or ITB 34.1 in Two-

ODISHA POWER TRANSMISSION CORPORATION LIMITED

NAME OF THE WORK:-Design, Supply and Installation of 2X160MVA Auto Transformer ,220/132 KV Out Door Type GIS Grid Sub-station at (Gundichapada),Dhenkanal and 2 nos. 132KV Feeder bay extension at existing 132/33KV Dhenkanal grid sub-station for connectivity with Dhenkanal GIS in Odisha State of India under PACKAGE-1 Under Japan International Cooperation Agency (JICA)'s ODA Loan.

Loan Agreement No: [ID-P245] - FB No: [CPC/JICA/ICB/01/18-19]- Reference Identification No: [OPTCL/JICA/PKG-1]

Schedule No. 4. Installation and Other Services (132KV Bay extension at existing 132/33KV Dhenkanal Grid Sub-station)

NAME OF THE BIDDER							
SL. NO.	ERECTION,TESTING & COMMISSIONING OF FOLLOWING EQUIPMENT/MATERIALS ALONG WITH CIVIL WORKS (As per Technical Specification)	UNIT	Quantity for: Construction of 2 nos. 132KV Feeder bay extension at existing 132/33KV Dhenkanal grid sub-station for connectivity with Dhenkanal GIS	Unit Price [1]		Total Price [1]	
				Foreign Currency Portion	Local Currency Portion	Foreign Currency Portion	Local Currency Portion
			1	2	3	(1x2)	(1x3)
PART A	**CIVIL WORKS**						
1	***Foundations : Design, engineering, supply of all labour, material (Cement-OPC-43 Grade,MS Rod, coarse and fine aggregates(Sand and Metal Chips) etc) for construction of RCC (1:1.5:3) & PCC (1:3:6), RCC footings of any depth, pedestal and piling as per requirement including soil investigation, excavation, concreting, shuttering, grouting, underpinning and back filling of foundations etc complete for the following switch yard gantry/ portal structures and equipment support & others as per the technical specification and approved drawings.(RCC RATIO 1:1.5:3). This also includes excavation in all types of soil or rocks,back filling and disposal of excess earth as per the direction of Engineer In charge.***						
1.1	**Switch yard gantry/portal structure foundations**						
1.1.1	T1S - 132 KV(NOMINAL UNIT WT- 1.2 MT)	NOS	4				
1.1.2	T4S - 132KV (NOMINAL UNIT WT- 0.95 MT)	NOS	1				
1.2	**Equipment foundations :**						
1.2.1	145 KV, 800-400-200 A, 31.5 KA, 4CORE SINGLE PHASE CURRENT TRANSFORMER	NOS	6				
1.3	145 KV,1200A, 31.5KA, ISOLATORS						

1.3.1	S/I WITH OUT EARTH SWITCH	NOS	2				
1.3.2	D/I WITH SINGLE EARTH SWITCH	NOS	2				
1.4	145 KV, 6600pF, 3CORE, SINGLE PHASE CAPACITOR VOLTAGE TRANSFORMER	NOS	6				
1.5	132 KV Bus Post Insulators	NOS	6				
1.6	145KV, 3150A, 40KA, SF6, CIRCUIT BREAKER WITH SUPPORTING STRUCTURE	NOS	2				
1.7	SUB STATION SWITCYARD BMK, AC CONSOLE & OTHER MARSHALLING BOXES						
1.7.1	BAY MARSHALLING KIOSK ***(01 Nos 132 kv bay)***	NOS	2				
1.7.2	CT, PT & CVT Out Door Console Boxes (132 KV CT-2 Nos)	NOS	4				
1.8	**EXCAVATION.:This also includes excavation in all types of soil or rocks,backfilling,and disposal of excess earth as per the direction of Enginer In charge.**						
1.8.1	Normal Soil(SOFT/LOOSE)	Cum	500				
1.8.2	Hard Soil	Cum	450				
1.8.3	Soft Rock	Cum	250				
1.8.4	Hard Rock(Requiring Blasting/Using breaker machinery)	Cum	250				
1.8.5	Design, Engineering, Providing and laying of plain cement concrete (PCC 1:3:6) of grade M10 with approved quality coarse aggregates (Nominal size 12mm to 20mm) , fine aggregates, cement in for the above column/equipment/marshalling box foundations { Sl No. 1.1 & 1.2} column and equipment foundation as blind layer inclusive of labour charges for concrete mixing & curing. This includes supply of all labourers, T&P and dewatering wherever required as per Technical specification and instruction of Engineer In charge.	Cum	39				
1.8.6	Open cast foundation for the above column/equipment/marshalling box foundations { Sl No. 1.1 & 1.2} with RCC: 1:1.5:3 (Grade M-20),including supply of Labour all materials as per design in the foundation pit as required for the above foundations),Cement, coarse and fine aggregates,shuttering,proper curing of the foundations/concrete and T&P in line with the Specification and as per direction of Engineer in Charge.	Cum	225				
1.8.7	Supply, cutting,bending, binding (including supply of binding wire) placing in position of steel rods for foundation concreting including cost of binding wire	MT	2.8				

2	Cable Trenches: Design, engineering, and construction of RCC cable trenches and all associated works for cable trench and cable trench crossings as per technical specifications and approved drawings and as per direction of the Engineer in Charge. (1) This also includes excavation in all types of soil or rocks,back filling,and disposal of excess earth as per the direction of Engineer In charge. (2) Design, Engineering, Providing and laying of plain cement concrete (PCC 1:3:6) of grade M10 with approved quality coarse aggregates (Nominal size 12mm to 20mm) , fine aggregates, cement in cable trench as blind layer inclusive of labour charges for concrete mixing & curing. This includes supply of all labourers, T&P and dewatering wherever required as per Technical specification and instruction of Engineer In charge. (3) Open cast foundation for the cable trench with RCC: 1:1.5:3 (Grade M-20 Nominal mixing),including supply of Labour all materials like MS Rod,Cement, coarse and fine aggregates,shuttering,cutting,bending,binding of M.S.Rod including supply of binding wire proper curing of the foundations/concrete and T&P in line with the Specification and as per direction of Engineer in Charge. (4) Fly ash Brickwork with fly ash Fly ash Brick ,plastering (!:6 Ratio) & curing, wherever required including the supply of labour,material, cement, etc. (5)Supply,fabrication & Fixing of MS Angle(G.I) for cable tray support (as per specification). The cable tray support frame shall be pre fabricated GI angle as per requirement and to be welded with the plate fixed on the trench wall for better rigidity. The plate (6mm) fixed on the wall are also to be welded with the MS rods provided for the trench wall before concreting. (6) Precast of RCC covers (1:1.5:3) and its fixing on the cable trench as per spec and instruction of Engg. In Charge. (7) CABLE TRENCHES INSIDE THE CONTROL ROOM SHALL BE COVERED WITH M.S CHEQUERED PLATE(Duly painted as per instruction of Engg in charge) INCLUDING STANDARD SUPPORT STAND {HD Galvanised (M.S JOIST ,CHANNEL,ANGLE)}.						
2.1	Section 1-1	Mtrs	30				
2.2	Section 2- 2	Mtrs	60				
2.3	Section 3-3	Mtrs	30				
2.4	Section 4-4	Mtrs	30				
3	**Cable trench crossing**:Design,engineering,construction including supply of labour,materials,cement,reinforcement steel,formwork etc,and all associated works for construction of trench crossing as per technical specification and approved drawing.(Road crossing)						
3.1	Section 3-3	Nos	1				

4	Contour Survey & Leveling of sub-station and other area and stone pitching works to protect from soil erosion. LEVELLING OF S/S AREA:Providing, neatly dressing up and leveling of switch yard area to a required level as decided by the Engineer in Charge, the work includes removal, clearing of the entire area from vegetation, trees, bushes, uprooting of plants and disposal of surplus earth and unusable material from the site by means of any mechanical transport, with all labours, tools, tackles and plants complete as per approved drawing and specification. This also includes excavation in all type of soils or rocks, and disposal of excess earth or rocks and filling of areas of switch yard by borrowed earth/sand to make the area to a level for construction as per scope.						
4.1	***Contour survey of the proposed sub-station area including Supply of all labour & T&P by contractor.***	***SQM***	1200				
4.2	**Cutting of sub-station area of the as per the direction of Engineer in Charge including supply of all labour, T&P (Hard & Compact Soil) .**	***Cum***	400				
4.3	**Filling with borrowed earth beyond 30 mtrs lead as per the direction of Engineer in Charge.**	***Cum***	100				
5	**Roads:** Design, construction of roads and walkways/ shoulders within sub-station***(Switch yard area,approach road, control room area, main gate to the switch yard gate etc) a***s per specification, layout and approved drawings complete. This also includes excavation in all types of soil or rocks, back filling,and disposal of excess earth as per the direction of Enginer In charge. Provision of drains on both the side of the roads for easy discharge of rain water.(Refer the indicative drawing of s/s layout)						
5.1	7 mtrs wide Concrete roads with shoulder as per specification indicated in the civil section. & shall have drain on both side of the road. 7 Mtrs wide road inside the switchyard to be connected to switch yard main gate.	MTRS	20				
6	**PCC before site surfacing :**Providing and supplying all labour, material, equipments etc. required for proper leveling of earth after erection of structures and equipments and proper compaction by using roller of adequate capacity(minimum 3 Ton capacity) with water sprinkling of switch yard area. After proper leveling of the switch yard area (after anti-weed treatment), spreading of plain cement concrete with mixing ratio 1:3:6 (M10) and maintaining proper sloping for easy discharge of storm water having concrete thickness of 75 mm. including rolling , dressing, compacting,the area. As per technical specification and approved drawing, and as per the instruction of the Engg-in-Charge. This also includes excavation in all types of soil or rocks,back-filling,and disposal of excess earth as per the direction of Engineer in charge and approved drawing. (Switch yard area)	CUM	78.75				

7	**Metal Spreading:** Providing supplying and laying two layers of machine crushed metals (gravel) fill, the first layer after compaction shall make minimum 50 mm thickness coarse/ layer of 20 mm nominal size consolidated/ compacted and (by using roller as specified in the specification).A final layer of 50 mm thickness of machine crushed 20 mm nominal size of metals(gravel) above the first layer of 50 mm thickness and as per the technical specification and instruction of Engineer in charge above the PCC(1:3:6). The total compacted thickness of the metals(20 mm Nominal) 100mm above the PCC.	CUM	105				
8	**STONE PITCHING & TOE WALL**:Stone pitching including making of toe walls both at top and bottom, including surface drain both at top and bottom and partition wall in every 10 mtrs by using boulders and RR masonry walls respectively. This also includes excavation in all types of soil or rocks,back filling,and disposal of excess earth and supply of materials and labour as per the direction of Engineer In charge and as per approved drawing and specification.	LOT	1				
9	**Switch yard fencing:** Providing and fixing of G.I Goat mesh (2.5 mm dia) fencing(the posts and links shall be of HD Galvanized) in switch yard and other areas of the substation with a total fence height complete as per specification and approved drawings, and as required under the safety regulation of local, state and central government bodies and as per instruction of the Engineer-in-Charge (The PCC work for grouting the post shall be 1:2:4	MTR-RUN	70				
	TOTAL OF CIVIL WORKS (PART-A)						
PART B	**ELECTRICAL WORKS**						
1	145 KV,800-400-200 A,31.5 KA,4CORE SINGLE PHASE CURRENT TRANSFORMER (3 NOS PS CLASS & 1 NO. 0.2s CLASS)	NOS	6				
2	145 KV,1250A,31.5KA,ISOLATORS						
'2.1	S/I WITH OUT EARTH SWITCH	NOS	2				
'2.2	D/I WITH SINGLE EARTH SWITCH	NOS	2				
3	145 KV,6600pF,3CORE,SINGLE PHASE CAPACITOR VOLTAGE TRANSFORMER	NOS	6				
4	132 KV Bus Post Insulators	NOS	4				
5	145KV, 3150A, 40KA, SF6, CIRCUIT BREAKER WITH SUPPORTING STRUCTURE	NOS	2				
6	**ERECTION OF BUS BAR & CIRCUIT MATERIALS**						
6.1	Supply of labour,T&P and other necessary arrangements for stringing of bus bar conductors,hoisting of single or double insulator strings,Single or Double Hard-wares Fittings, Clamp & connectors, as per requirements, Jumpers, connections to Equipments,testing,commissioning etc. as per the instruction of Engineer-in charge.						
6.1.1	Twin Conductor	Mtr	400				
6.1.2	Single Conductor	Mtr	600				

6.2	Supply of labour,T&P & other necessary arrangement for erection of all type of HARDWARES & FITTINGS/SPACERS/CLAMP & CONNECTORS as per the instruction of Engineer-in charge.	LOT	1.00				
7	**EARTH SPIKES & IT'S HARDWARES & FITTING**						
7.1	FOR 132KV SIDE : 21 NOS @ 7 MTRS LENGTH EACH	SET	**5**				
8	**SUBSTATION EARTHING SYSTEMS**						
8.1	EARTHING CONDUCTOR FOR BURRIAL : 75X10 mm GI Earth Flat for laying (*spacing maximum 5m*) (Substation earth mat): Design, engineering, supply (except the MS Rods, only erection) inclusive of corrosion protection measures if any,laying of earth mat conductors of size 75X10 mm GI Flat as per the approval of Engineer in charge, excavation, welding/jointing of ground conductors along with risers (a) up to Finished level from the mat size 75X10 mm GI Flat with back filling and good compaction,The spacing between the earth conductor not more than 5 mtrs (both way) and to be buried at depth of 700 mm from the finished ground level as per the practice and as per specification.	MTRS	1418.88				
8.2	EARTHING CONDUCTOR: 50x6 mm **GI Flat** for Raiser from the burial earth mat to equipment,structure including proper welding, bending and anti corrosive painting etc from the finished ground level to the top of the structure and equipment shall be with 50X6 mm GI Flats, as per approved drawing and specification.	MTRS	953.39				
8.3	EARTHING DEVICE & ASSOCIATED ACCESSORIES (50 mm heavy duty GI PERFORATED PIPE 3 mtrs long for treated earth pit): perforated 50 mm Heavy duty GI pipes for treated earth pits (with details of treatment as per IS) including, excavation,supply of Bentonate powder and other materials for the treated earth pit as per standard practice and as per specification.	NOS	30				
8.4	EARTHING DEVICE & ASSOCIATED ACCESSORIES 40mm MS rod 3 mtrs long for non treated earth pit)	NOS	30				
9	**G.I Cable Trays including G.I. support Angle suitable for different sections i.e. Section:1-1,2-2,3-3 & 4-4 along with its accessories as per TS.**						
9.1	G.I Cable Trays(size: 450x75x2500mm)	MTRS	200				
9.2	G.I Cable Trays(size: 300x75x2500mm)	MTRS	300				
9.3	G.I Cable Trays(size: 150x75x2500mm)	MTRS	300				
9.4	Support G. I angle 50x50x6 mm for cable tray	MT	1				
10	SUB STATION SWITCYARD BMK, AC CONSOLE & OTHER MARSHALLING BOXES						
10.1	BAY MARSHALLING KIOSK	NOS	2				
10.2	CT, PT & CVT Out Door Console Boxes (132 KV CT-2 Nos).	NOS	4				

11	**SWITCH YARD STRUCTURES COLUMN & BEAM (LATTICE TYPE) FOR 132/33 KV CLASS INCLUDING FOUNDATION BOLTS & NUTS.**						
11.1	**DIFFERENT TYPES OF COLUMNS WITH DETAILS**						
11.1.1	T1S - 132 KV(NOMINAL UNIT WT- 1.2 MT) = 4 Sets	MT	4.80				
11.1.2	T4S - 132KV (NOMINAL UNIT WT- 0.92 MT) = 1 Set	MT	0.92				
11.2	**DIFFERENT TYPE OF BEAMS WITH DETAILS**						
11.2.1	G1 - 132 KV(NOMINAL UNIT WT- 0.58 MT) = 4 Sets	MT	2.32				
11.2.2	G2 - 132 KV(NOMINAL UNIT WT- 0.9 MT) = 2 Sets	MT	1.80				
11.3	**TOTAL WEIGHT OF COLUMN & BEAM**	**MT**	**9.84**				
11.4	**SWITCH YARD EQUIPMENT STRUCTURES (LATTICE TYPE) FOR 132/33 KV CLASS INCLUDING FOUNDATION BOLTS & NUTS.**						
11.4.1	S.I. WITHOUT E/S (Unit weight - 658.767 Kg) = 2 No.	MT	1.32				
11.4.2	D.I. WITH E/S (Unit Weight - 1120.559 Kg) = 2 No.	MT	2.24				
11.4.3	CTS-132 KV (Unit Weight - 214.546 Kg) = 6 Nos.	MT	1.29				
11.4.4	Surge Arrester-132 kV (Unit Weight - 179.893 Kg) = 6 Nos.	MT	1.08				
11.4.5	BPI-132 KV (Unit Weight - 309.883 Kg) = 6 Nos.	MT	1.86				
11.5	**TOTAL WEIGHT OF EQUIPMENT STRUCTURE**	**MT**	**7.78**				
11.6	**Total weight of GI Nuts and bolts for the above Column, Beam & structures**	**MT**	**1.00**				
12	**GENERAL EQUIPMENT & SUBSTATION ACCESSORIES**						
12.1	**POWER CABLES,1.1KV,XLPE/PVC ARMOURED, ALUMINIUM CONDUCTOR (As per Specification)**						
12.1.1	PVC 3.5 CX35 mm^2	MTRS	200				
12.1.2	PVC 4 CX 6 mm^2	MTRS	250				
12.1.3	PVC 2CX 6 mm^2	MTRS	500				
12.2	**CONTROL CABLES,1.1 KV, PVC,STRANDED COPPER(As per specification)**						
12.2.1	2 CX 2.5 mm2	MTRS	500				
12.2.2	4 CX 2.5 mm^2	MTRS	2000				
12.2.3	5 CX 2.5 mm^2	MTRS	500				
12.2.4	7CX 2.5 mm^2	MTRS	500				
12.2.5	10 CX 2.5 mm^2	MTRS	1000				
12.2.6	12 CX 2.5 mm^2	MTRS	1000				

13	**SUB STATION LIGHTING (AS PER SPECIFICATION AND APPROVED DRAWINGS)(Switch yard and other street area)**						
13.1	**Erection of LED LAMPs with fixtures & switch gear alongwith supply & fixing of GI Conduit etc.(Lighting fixtures are to be fixed rigidly on the Column in the SWITCH YARD at a suitable height so that the required lux can be maintained).Required cable connections to be made from nearest A.C source.(* REMARKS : FOR SUPPLY OF ALL THE CABLES AS INDICATED ARE COVERED IN THE CABLE ITEMS for SUPPLY CONTRACT) & as per instruction of Engineer in charge**	SET	8				
14	**PROTECTION,CONTROL METERING, AS PER TECH SPEC**						
10.1.1	132 KV SIDE						
10.1.2	132KV FEEDER PROTECTION PANEL (MAIN-I & BACK-UP PROTECTION DISTANCE PROTECTION with Bay control unit (BCU) for substation automation system. (b) Supply of Main-I Line differential Protection only along with all other accessories required for succesful operation between Dhenkanal-B & Dhenkanal-A.	NOS	2				
11	BEST QUALITY &APPROVED MAKE INSULATING MAT (Confirming to IS:15652:2006) TO BE KEPT INFRONT OF ALL PANELS,BOARDS ETC.(2000X1000X3)mm Size	NOS	4				
12	**COLOUR CODING, BAY MARKING Etc**:Design, engineering, procurement of labour, material including all associated works for the followings. This should be as per direction of site In charge. a)Color coding (red,Yellow & Blue) for equipments,Bus gantry &column of entire switch yard. Good quality weather proof sticker may be used for identification. b)Each bay should be identified with the help of bay marker sign board, suitably grouted. MS sign board with stand to be installed. Proper painting and lettering to be done of the entire switch yard area.	Lot	1				
	TOTAL OF ELECTRICAL WORKS (PART-B)						
	TOTAL OF ERECTION OF SUBSTATION (Electrical Work) & (Civil Work) -Schedule-4-132KV Bay extn. (to Schedule No. 6 Grand Summary)						

1 Specify currency in accordance with specifications in Bid Data Sheet under ITB 19.1 in Single-Stage Bid, or ITB 34.1 in Two-Stage Bid.

ODISHA POWER TRANSMISSION CORPORATION LIMITED

NAME OF THE WORK:-Design, Supply and Installation of 2X160MVA Auto Transformer ,220/132 KV Out Door Type GIS Grid Sub-station at (Gundichapada),Dhenkanal and 2 nos. 132KV Feeder bay extension at existing 132/33KV Dhenkanal grid sub-station for connectivity with Dhenkanal GIS in Odisha State of India under PACKAGE-1 Under Japan International Cooperation Agency (JICA)'s ODA Loan.

Loan Agreement No: [ID-P245] - FB No: [CPC/JICA/ICB/01 /18-19]- Reference Identification No: [OPTCL/JICA/PKG-3]

Schedule No. 6. Grand Summary

NAME OF THE BIDDER			
Item	**Description**	**Total Price[1]**	
		Foreign	**Local**
1	Total Schedule No. 1. Plant, Supplied from Abroad (Substation)		
2	Total Schedule No. 2. Plant, Supplied from Within the Employer's Country (substation)		
3	Total Schedule No. 3. Design Services (Not Applicable)		
4	Total Schedule No. 4. Installation and Other Services (substation)		
5	Total Schedule No. 5. Provisional Sums (Not to be considered for Evaluation)		
Total(to Bid Form)			

Name of Bidder:_____

Signature of Bidder:_____

[1] Specify currency in accordance with specifications in Bid Data Sheet under ITB 19.1 in Single-Stage Bidding, or ITB 34.1 in Two-Stage Bidding. Create and use as many columns for Foreign

ODISHA POWER TRANSMISSION CORPORATION LIMITED

NAME OF THE WORK:-Design, Supply and Installation of 2X160MVA Auto Transformer ,220/132 KV Out Door Type GIS Grid Sub-station at (Gundichapada),Dhenkanal and 2 nos. 132KV Feeder bay extension at existing 132/33KV Dhenkanal grid sub-station for connectivity with Dhenkanal GIS in Odisha State of India under PACKAGE-1 Under Japan International Cooperation Agency (JICA)'s ODA Loan.

Loan Agreement No: [ID-P245] - FB No: [CPC/JICA/ICB/01 /18-19]- Reference Identification No: [OPTCL/JICA/PKG-3]

Schedule No. 7. Recommended Spare Parts

NAME OF THE BIDDER						
Sl. No.	**DESCRIPTION OF ITEMS SUPPLY OF SPARES FOR THE FOLLOWING EQUIPMENTS. (As per Technical Specification)**	**Unit**	**Quantity**	**Unit Price**		**Total Price in INR**
				CIP (foreign parts)	Ex-Works Price Local Parts	
			(1)	***(2)***	***(3)***	***(1) x (2) or (3)***
	TOTAL					

Name of Bidder:_____

Signature of Bidder:_____

Note: Recommended Spares shall not be taken in to consideration for evaluation purpose.

ODISHA POWER TRANSMISSION CORPORATION LIMITED

NAME OF THE WORK:-Design, Supply and Installation of 2X160MVA Auto Transformer ,220/132 KV Out Door Type GIS Grid Sub-station at (Gundichapada),Dhenkanal and 2 nos. 132KV Feeder bay extension at existing 132/33KV Dhenkanal grid sub-station for connectivity with Dhenkanal GIS in Odisha State of India under PACKAGE-1 Under Japan International Cooperation Agency (JICA)'s ODA Loan.

Loan Agreement No: [ID-P245] - FB No: [CPC/JICA/ICB/01/18-19]- Reference Identification No: [OPTCL/JICA/PKG-3]

Schedule No. 8. Details of Taxes & Duties

NAME OF THE BIDDER

Sl No	Description of Applicable Tax/Levy		Tax @ __%	Total Amount of Taxes /Duty/ Levies
1	Details of Taxes and levies on the direct / bought out transactions between Bidder and ODISHA POWER TRANSMISSION CORPORATION LTD included in the Bid			
(i)	TOTAL IGST			
(ii)	TOTAL CGST			
(III)	TOTAL OGST			
(iv)	TOTAL Any other tax			
	TOTAL OF TAXES AND DUTIES [Sum (i) to (iv)			
2	Details of Taxes and levies on the direct / bought out transactions between Bidder and ODISHA POWER TRANSMISSION CORPORATION LTD included in the Bid Price above but as may be payable by ODISHA POWER TRANSMISSION CORPORATION LTD (Schedue- 4)			
(i)	TOTAL IGST			
(ii)	TOTAL CGST			
(III)	TOTAL OGST			
(iv)	TOTAL Any other tax			
	TOTAL OF TAXES AND DUTIES [Sum (i) to (iv)			
4	F. Total Bid Price: (including Taxes & Duties and other			

Name of Bidder:_____

Signature of Bidder: