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S.No.		Description	Unit	QTY.	Remarks
<b>S1</b>		<b>420 KV GIS Mandatory Spares</b>			
	B1	400 KV GIS (as applicable)			
	B1.1	SF6 gas pressure Relief Devices, 3 nos of each type	Sets	2	
	B1.2	SF6 pressure gauge with coupling device cum switch or density monitors and pressure gauge, as applicable ( 1 no. of each type)	Set	1	
	B1.3	Rubber gaskets, "o" Rings and seals for SF6 gas, including Circuit Breaker, Disconnecter and other GIS equipments ( 6 no. of each type)	Set	1	
	B1.4	Molecular filter for SF6 gas with filter bags - 20 % of total supply	Lot	1	
	B1.5	SF6 gas - 20 % of total gas - included in main.	Lot	1	
	B1.6	Covers with all accessories necessary to close a compartment in case of dismantling of any part of the Enclosure to ensure the sealing of the compartment			
	B1.6.1	For 1 phase enclosures ( 3 nos. of each type)	Set	1	
	B1.6.2	Locking device to keep Dis-connectors and Earthing switches in close or open position in case of removal of the driving mechanism (if applicable)	Nos.	3	
	B1.6.3	Bus support insulator of each type ffor single phase enclosure ( 6 nos. of each type)	Set	1	
	B1.6.4	SF6 to air bushing for 1 phase enclosure	Nos.	2	
	B1.6.5	Spares for Local control cabient including MCB, fuses, timers, Aux. Relay of each type & rating, terminals of each type (set)	Nos.	1	
	B1.6.6	All types of Corona shield (3 Nos. of each type)	Set	1	
	B1.6.7	Windowscope/ Observing window, 3 Nos. of each type (if applicable)	Set	1	
	B2	Circuit Breaker			
	B2.1	Complete Circuit Breaker 1 phase pole of each type & rating complete with interrupter, main circuit and enclosure with operating mechanism	Sets	3	
	B2.2	Fixed, moving and arcing contacts ( 3 nos. of each type)	Set	1	
	B2.3	Trip Coil assembly with resistor as applicable, 3 nos. of each type	Sets	2	
	B2.4	Closing Coil assembly with resistor as applicable, 3 nos. of each type	Sets	2	
	B2.5	Relays, Power contactors, push buttons, timers & MCBs etc of each type & rating	Set	1	
	B2.6	Closing assembly/ valve, 3 nos. of each type ( if applicable)	Sets	2	
	B2.7	Trip assembly/ valve, 3 nos. of each type (if applicable)	Sets	2	
	B2.8	Aux. switch assembly, 3 Nos. of each type	Set	1	
	B2.9	Opeartion counter, 3 nos. of each type	Set	1	
	B2.10	Rupture disc, 3 Nos. of each type ( if applicable)	Set	1	
	B2.11	Set of spares for spring operated mechanism - 1 set for each type of Circuit breaker			
		Spare for spring operated mechanism			
		a. Motor - one no	Set	1	
		b. Limit switch - one no. of each type	Set	1	
	B2.12	Insulating nozzle (6 nos. each) - 1 set for each type of Circuit breaker	Set	1	
	B3	Disconnecter			
	B3.1	Complete set of 3 nos. of single phase disconnecter inculding main circuit, enclosure and driving mechanism	Set	1	
	B3.2	High speed/ fast acting fault making grounding switch, 3 nos. of single phase of each rating, including main circuit, enclosure and driving mechanism	Set	1	
	B3.3	3 nos. of single phase Earthing switch including main circuit, and driving mechanism	Set	1	
	B3.4	Copper contact fingers for disconnecter male & female contact- for one complete (3 phase) disconnecter of each type & rating	Set	1	
	B3.5	Copper contact fingers for earthing switch male & female contact- for one complete (3 phase) disconnecter of each type & rating	Set	1	
	B3.6	Open/close contactor assembly, timers ,key interlock for one complete ( 3 phase) disconnecter and earthing switch of each type & rating	Set	1	
	B3.7	Push button switch - each type	Set	1	
	B3.8	Limit switches and Aux. switches for complete 3-phase equipment			
	B3.8.1	a. For Disconnecter	Sets	3	
	B3.8.2	b. for Earth switch	Set	1	
	B3.8.3	c. For high speed earth switch	Set	1	
	B3.9	Rotor housing assembly for complete 3 -phase equipment			
	B3.9.1	a. For Disconnecter	Sets	2	
	B3.9.2	b. For Earth Switch	Set	1	
	B3.9.3	c. For high speed earth switch	Set	1	
	B3.10	Motor with gear assembly for complete 3-phase equipment			
	B3.10.1	a. For Disconnecter	Sets	3	
	B3.10.2	b. For Earth Switch	Set	1	
	B3.10.3	c. For high speed earth switch	Set	1	
	B3.11	Bearing for complete 3-phase equipment			
	B3.11.1	a. For Disconnecter	Sets	5	
	B3.11.2	b. For Earth Switch	Set	1	
	B3.11.3	c. For high speed earth switch	Set	1	
	B3.12	Interlockingcoil with resistors, timers,key interlock for complete 3 phase equipment , as applicable ( each type & rating)	Set	1	
	B3.13	Relay, Power contactors, resistors, fuses,push buttons, timers & MCBs (Complete for one 3 phase equipment)			
	B3.13.1	a. For Disconnecter	Sets	3	

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S.No.	Description	Unit	QTY.	Remarks
B3.13.2	b. For Earth Switch	Set	1	
B3.13.3	c. For high speed earth switch	Set	1	
B4	Current Transformer			
B4.1	Complete CT , as applicable, with enclosure, as applicable, 1 no. of each type & rating	Set	1	
B5	Voltage Transformer			
B5.1	Gas Insulated complete VT with enclosure	Set	1	
<b>S2</b>	<b>420 KV GIS Mandatory Maintenance Equipment</b>			
C1	SF6 Gas filling and evacuating plant (portable)	Nos.	1	
C2	SF6 Gas Filtering, Drying, Storage, Recycling Plant	Nos.	1	
C3	SF6 gas analyzer	Nos.	1	
C4	SF6 Gas leak detector	Nos.	1	
C5	Operational analyser with DCRM kit	Nos.	1	
<b>S3</b>	<b>420 KV GIS Mandatory Monitoring Equipments</b>			
D1	Dew Point Meter	Nos.	1	
D2	Portable PD Monitoring System for Gas Insulated Switchgear	Nos.	1	
<b>S4</b>	<b>420 KV GIS Tools and Tackles</b>			
E1	Filling pipe	Nos.	2	
E2	Hand shank for DS	Nos.	2	
E3	Hand shank for CB	Nos.	2	
E4	Herringbone ladder	Nos.	2	
E5	Spanner (10~100N.m)	Nos.	2	
E6	Spanner (100~500N.m)	Nos.	2	
E7	Lifting rope(4T, 4m)	Nos.	2	
E8	Lifting rope(2T, 4m)	Nos.	2	
E9	Trolley for SF6	Nos.	2	
E10	Density Meter	Nos.	3	
E11.1	Hygrometer	Nos.	1	
E11.2	Portable dust counter	Nos.	1	
E11.3	Special gas mask for GIS maintenance	Nos.	5	
E11.4	Vacuum meter	Nos.	1	
E11.5	Digital contact resistance meter	Nos.	1	
E11.6	Power operated insulation tester	Nos.	1	
E11.7	Tong testers of suitable ranges	Nos.	1	
E11.8	Contact resistance measuring set for micro ohms	Nos.	1	
<b>S5</b>	<b>420kV, 125MVAr , 3-Ph, Bus Reactor</b>			
1	HV Bushing with metal parts and gaskets	Nos.	3	
2	HV Neutral bushing with metal parts and gaskets (if applicable)	Nos.	1	
3	MV Bushing with metal parts and gaskets	Nos.	-	
4	LV bushing with metal parts and gaskets	Nos.	-	
5	LV Neutral bushing with metal parts and gaskets (if applicable)	Nos.	-	
6	WTI with contacts	Nos.	1	
7	OTI with contacts	Nos.	1	
8	Pressure relief device	Nos.	1	
9	MOG	Nos.	1	
10	Buchholz relay complete	Nos.	1	
11	Oil surge relay	Nos.	-	
12	Set of gaskets	Set	1	
13	Set of valves	Set	2 No. of each type/size	
14	Cooler fan with motor	Nos.	-	
15	Oil Pump with motor	Nos.	-	
16	Oil flow meter	Nos.	-	
17	Set of OLTC/OCTC contacts	Nos.	-	
18	Air cell for conservator	Nos.	1	
19	Neutral Grounding Resistor w/o supporting structure	Nos.	-	

**Notes:**

1 set consists of quantities required for 1 complete transformer/reactor of each type (as applicable).

2. Each mandatory spare OIP bushing shall be provided with suitable "stand".

<b>S6</b>	<b>LT SWITCHGEAR/MCCs/DISTRIBUTION BOARDS</b>			
1	Complete breaker of each rating	Nos.	3	
2	Ammeter of each type, size & range	Nos.	2	
3	Voltmeter of each type, size & rating	Nos.	2	
4	Relays of each type	%	5% of Total Quantity (Min. 1 No.)	
5	Horizontal busbar support insulators	Nos.	10	
6	Spring charging motors of each type & rating	Nos.	3	
7	Aux. Contact set of each type & rating	Sets	6	
8	Limit switches of each type & rating	Nos.	10	
9	Arc chutes of each type & rating	Nos.	4	
10	Fixed contact set of each type & rating	Sets	6	
11	Moving contact set of each type & rating	Sets	6	
12	Arcing contact of each type & rating	Sets	6	
13	Charging spring of each type & rating	Nos.	4	
14	Current transformer of each type & ratio	Nos.	3	
15	Closing coil of each type & rating	Nos.	12	
16	Trip coil of each type & rating	Nos.	12	

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S.No.	Description	Unit	QTY.	Remarks
17	CT for Bimetal O/L relays of each type & rating	Nos.	3	
18	Voltage transformer of each type & ratio	Nos.	3	
19	Control supply transformer of each type & rating	Nos.	3	
20	Contactors and Contactor Coil			
20.1	(a) Power contactor of each type & rating	Nos.	2	
20.2	(b) Coil for above contactor of each type & rating	Nos.	2	
21	Air break switches & MCCB of each type & rating	Nos.	3	
22	DP air break switches(DC) of each type & rating	Nos.	3	
23	Control & selector switches of each type & rating	Nos.	5	
24	Control Fuses and Neutral Links			
24.1	(a) Control fuses (equally divided for all ratings)	Nos.	50	
24.2	(b) Neutral links (equally divided for all ratings)	Nos.	10	
25	Indicating lamps (equally divided for all types & ratings)	Nos.	50	
26	Vertical busbar dropper support insulators	Nos.	25	
27	Busduct flexible connectors of each type & size (one set is for all three phases for both transformer & switchgear ends)	Set	1	
28	Primary and Secondary disconnect in MCC			
28.1	(a) Primary disconnect in MCC - Busbar end (Male/female contact) (equally divided for all ratings)	Nos.	15	
28.2	(b) Secondary disconnect in MCC - Cable end (equally divided for all ratings)	Nos.	15	
29	Push buttons	Nos.	15	
30	Power fuses (equally divided for all ratings)	Nos.	100	
31	Thermal Bimetal relays (equally divided for all ratings)	Nos.	30	
32	Current transducers (equally divided for all types & ratings)	Nos.	12	
33	Voltage transducers (equally divided for all types & ratings)	Nos.	12	
34	Indication lamp holders (equally divided for all types & ratings)	Nos.	50	
35	Busbar aluminium flat pieces of each type & rating	Meter	12	
36	Busbar angles / formed pieces for breaker of each type & rating	Nos.	2	
37	Terminal blocks of each type & rating	Nos.	12	
38	Maintenance tools and accessories for maintenance of LT MCC	Nos.	2	
<b>S7</b>	<b>LT TRANSFORMERS</b>			
1	HV Bushing with metal parts and gaskets - See Note 2	Nos.	3	
2	HV Neutral bushing with metal parts and gaskets (if applicable)	Nos.	1	
3	LV bushing with metal parts and gaskets - See Note 2	Nos.	3	
4	LV Neutral bushing with metal parts and gaskets (if applicable)	Nos.	1	
5	WTI with contacts	Nos.	1	
6	OTI with contacts	Nos.	1	
7	Pressure relief device (as applicable)	Nos.	1	
8	MOG	Nos.	1	
9	Buchholz relay complete	Nos.	1	
10	Set of gaskets (See note 3)	Set	1	
11	Set of valves (Each Set Consisting Of 2 Nos of each type/size )	Set	1	
12	Air cell for conservator (as applicable)	Nos.	1	

**Notes:**

1. Each mandatory spare OIP bushing shall be provided with suitable "stand".
2. 1 Set consists of gaskets required for 1 No. transformer for the following
  - a. Protection and Monitoring Devices.
  - b. Cooler Circuit.
  - c. Largest inspection cover, if applicable
  - d. HV/LV turret, if applicable.
  - e. OLTC inspection cover, if applicable.

<b>S8</b>	<b>Clamps and Connectors &amp; String Insulators and Hardware</b>			
1	10% of each type of clamps, connectors and spacers	Lot	1	
2	10% of Each type of insulator string and hardware	Lot	1	
<b>S9</b>	<b>BATTERY (Quantity Of spares shall be provided for each set of battery being supplied)</b>			
1	Complete dry cell	% or Nos.	2% or 5 Nos. whichever is more	
2	Inter-cell connectors with Hardware	% or Nos.	5% or 10 Nos. whichever is more	
3	Vent Plug	% or Nos.	5% or 10 Nos. whichever is more	
4	Electrolyte Level indicating float ( for opaque containers only)	% or Nos.	5% or 10 Nos. whichever is more	
5	Stand Insulator (if applicable)	% or Nos.	5% or 10 Nos. whichever is more	
6	Cell Insulator	% or Nos.	5% or 10 Nos. whichever is more	
	<b>Battery Accessories - Quantity (in Nos.) (Per battery bank)</b>			
7	Hydrometer	Nos.	2	
8	Set of hydrometer syringes suitable for the vent holes in different cells	Nos.	2	
9	Thermometer for measuring electrolyte temperature	Nos.	2	
10	Specific gravity correction chart	Nos.	2	
11	Wall mounting type holder made of teak wood for hydrometer & thermometer	Nos.	2	
12	Cell Testing Voltmeter (3—0-3V)	Nos.	3	

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S.No.		Description	Unit	QTY.	Remarks
	13	Alkali Mixing Jar	Nos.	2	
	14	Rubber Aprons	Nos.	5	
	15	Pair of rubber gloves	Nos.	5	
	16	Set of Spanners	Nos.	5	
	17	No Smoking notice for each battery room	Nos.	2	
	18	Goggles (Industrial)	Nos.	2	
	19	Instruction Card	Nos.	5	
S10		<b>BATTERY CHARGERS (Quantity Of spares shall be provided for each set of battery chargers being supplied)</b>			
		Set of Electronic Cards / Modules	Set	1 set of each type & rating	
		Set of Auxiliary relays	Set	1 set of each type & rating	
		Set of Fuse Links and Glass Fuses	Set	3 set of each type and rating	
		Set of SCR and Diode	Set	3 set of each type and rating	
		Rectifier Transformer	Set	1 No. of each type & rating	
		Control Transformers	Set	1 No. of each type & rating	
S11		<b>TEST EQUIPMENTS</b>			
	1	Portable Leakage current analyzer (for Gapless Surge Arrester)	Nos.	1	
	2	Off line SF6 dew point meter for 400kV, 220kV circuit breakers.	Nos.	1	
	3	Fully automatic contact resistance measurement kit (DC high current) for upto 400 kV circuit breakers	Nos.	1	
	4	Fully automatic infrared thermovision scanning system suitable for thermal scanning of switchyard equipments, panels etc. and having facility of data storage on separate card with necessary software for analysis.	Nos.	1	
	5	Fully automatic digital Level oscillator & level measurement meter for PLCC system.	Nos.	1	
	6	Dynamic Relay test Kit Along with necessary Software/Hardware	Sets	2	
S12		<b>336 kV, 1 Phase Surge Arrester</b>			
		Surge Arrester: 336 kV, 1 Phase, Gapless type Metal Oxide Surge Arrester complete with surge counter, leakage current meter, insulating base, connecting cable and terminal connector, without support structure.	Nos.	3	
S13		<b>420kV, 1 Phase CVT</b>			
		Capacitive Voltage Transformer (CVT): 400 kV, 8800pF, 1 Phase, 3 secondary with terminal connector, without support structure.	Nos.	1	
		Capacitive Voltage Transformer (CVT): 400 kV, 4400pF, 1 Phase, 3 secondary with terminal connector, without support structure.	Nos.	1	
S14		<b>Lighting(Illumination) System Spares</b>			
		SPARES- ILLUMINATION EQUIPMENT : LAMPS OF EACH TYPE & RATING OFFERED	Lot	1	2% or 3 nos. whichever is more
		SPARES- ILLUMINATION EQUIPMENT : FRONT GLASS OF EACH TYPE OFFERED	Lot	1	2% or 3 nos. whichever is more
		SPARES- ILLUMINATION EQUIPMENT : LAMP HOLDERS OF EACH TYPE OFFERED	Lot	1	2% or 3 nos. whichever is more
		SPARES- ILLUMINATION EQUIPMENT : DRIVERS:-LED FIXTURE	Lot	1	2% or 3 nos. whichever is more
		SPARES- ILLUMINATION EQUIPMENT : LIGHTING PANELS:- TIMER 24 HRS	Nos.	5	
		SPARES- ILLUMINATION EQUIPMENT : LIGHTING RECEPTACLES:- 20 A RECEPTACLES WITH PLUG	Nos.	15	
		SPARES- ILLUMINATION EQUIPMENT : LIGHTING CONTROL SWITCH:- 20 A ROTARY SWITCHES	Nos.	15	
		SPARES- ILLUMINATION EQUIPMENT : JUNCTION BOXES:- TYPE – F 2 – TERMINAL STRIPS	Nos.	75	
S15		<b>FOTE Equipment - List of items will be derived during detailed engineering stage</b>	Lot	1	
S16		<b>Control / Relay / SAS Panel Spare including relays</b>			
	1	Bay Control unit (complete with all components)	Nos.	2	
	2	Numerical Relays comprising various bay protection units, Bus Bar and Islanding Scheme	Nos.	1 No. of each type	
	3	Numerical Relays comprising GRP	Nos.	1 No. of each type	
	4	Cards/modules of Generator Disturbance Recorder, Line DR (if stand-alone)	Nos.	1 No. of each type	
	5	Energy Meter	Nos.	1 no. of each type	
	6	Operator work station (OWS) along with software, monitor, mouse, keyboard, printer etc.	Nos.	1	
	7	Complete Network Controller / Server along with software	Nos.	1	
	8	Complete Programming station along with software, monitor etc.	Nos.	1	
	9	LAN switches (if included in main package)	Nos.	1 No. of each type	
	10	Media cleaning solution	Bottles	2	
	11	Fuses	%	100% of each type and rating	
	12	Terminal Blocks	Nos.	5 nos. of each type, make, model and rating	

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S.No.		Description	Unit	QTY.	Remarks
	13	Interface cables containing standard length of each type of cable and its connector for each type of peripheral	Sets	2	
	14	MCBs	%	50% of each type, make and model used in the system	
	15	Relays other than numerical relays	%	10% of each type of total population (min 1 no.)	
	16	Gateways	Nos.	1 no. of each type	
	17	Modem (if applicable)	Nos.	1 no. of each type	
	18	LIU of OFC including necessary connectors	Nos.	1 no. of each type	
	19	Transducers	Nos.	1 no. of each type	
	20	Auxiliary CT/PT	Nos.	1 no. of each type	
	21	Lamps used in LVS	%	50% of Total Quantity (rounded to next integer)	