

SCHEDULE -1

GUARANTEED TECHNICAL PARTICULARS OF TRANSFORMERS

Sr. No.	Description	Unit	Particulars
A. TRANSFORMER			
1.0	Name of Manufacturer and country of origin		
2.0	Applicable standards		
3.0	Rated power	MVA	
4.0	No. of phases and rated frequency	/-Hz	
5.0	No-load voltage ratio		
6.0	No. of windings and material of conductor		
7.0	Type of cooling		
8.0	<u>Terminal connections</u>		
8.1	Primary winding		
8.2	Secondary winding		
9.0	Vector group		
10.0	<u>Temperature rise over design ambient</u>		
10.1	Top Oil by thermometer	°C	
10.2	Windings by resistance	°C	
11.0	<u>No load loss at rated frequency and at</u>		
	a) rated voltage	kW	
	b) 110% of rated voltage	kW	
12.0	Full load loss at Principle tapping corrected to 75° C	kW	
13.0	Auxiliary losses	kW	
14.0	Tolerance on losses	%	
15.0	Whether transformer main tank with bushings/ radiators, fittings and accessories can withstand full vacuum?	Yes/No	
16.0	<u>Impedance voltage</u>		
16.1	Positive sequence		
	a) At principle tap	%	

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Sr. No.	Description	Unit	Particulars
	b) At maximum voltage tap	%	
16.2	Zero sequence		
	a) At principle tap	%	
	b) At maximum voltage tap	%	
17.0	<u>Percentage reactance</u>		
	a) At principle tap	%	
	b) At maximum voltage tap	%	
18.0	<u>Percentage resistance</u>		
	a) At principle tap	%	
	b) At maximum voltage tap	%	
19.0	<u>Efficiency at rated voltage, frequency and full load and at</u>		
	a) Unity power factor	%	
	b) 0.8 p.f. lagging	%	
20.0	<u>Efficiency at rated voltage, frequency and 75% load and at</u>		
	a) Unity power factor	%	
	b) 0.8 p.f. lagging	%	
21.0	<u>Efficiency at rated voltage, frequency and 50% load and at</u>		
	a) Unity power factor	%	
	b) 0.8 p.f. lagging	%	
22.0	<u>No load current and power factor at rated frequency and at</u>	A/-	
	a) Rated voltage	A/-	
	b) 110% rated voltage	A/	
23.0	<u>Core flux density in core at rated frequency and at</u>		
	a) 100% rated voltage	Wb/m ²	
	b) 110% rated voltage	Wb/m ²	
24.0	Overfluxing capability		

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GUARANTEED TECHNICAL PARTICULARS OF TRANSFORMERS

Sr. No.	Description	Unit	Particulars
25.0	Core lamination material and grade		
26.0	<u>Type of winding insulation</u>		
26.1	Primary		
26.2	Secondary		
27.0	<u>Rated lightning impulse withstand voltage</u>		
27.1	Primary winding	kVp	
27.2	Secondary winding	kVp	
28.0	<u>Rated short duration induced or separate source AC withstand voltage</u>		
28.1	Primary winding	kV	
28.2	Secondary winding	kV	
29.0	Noise level of transformer	dB	
30.0	<u>Maximum current density</u>		
30.1	Primary winding	A/mm ²	
30.2	Secondary winding	A/mm ²	
31.0	<u>Minimum clearance in air</u>		
31.1	Phase to phase		
	a) Primary	mm	
	b) Secondary	mm	
31.2	Phase to earth		
	a) Primary	mm	
	b) Secondary	mm	
32.0	<u>Bushings</u>		
32.1	Type		
	a) Primary		
	b) Secondary		
32.2	One minute power frequency withstand voltage		

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GUARANTEED TECHNICAL PARTICULARS OF TRANSFORMERS

Sr. No.	Description	Unit	Particulars
	a) Primary bushing	kV	
	b) Secondary (line and neutral) bushing	kV	
32.3	Rated lightning impulse withstand voltage		
	a) Primary bushing	kVp	
	b) Secondary (line and neutral) bushing	kVp	
32.4	Nominal creepage distance		
	a) Primary bushing	mm	
	b) Secondary bushing	mm	
33.0	Are radiators detachable ?	Yes/No	
34.0	Whether core earthing provided	Yes/No	
35.0	<u>Overall dimensions</u> (length x breadth x height)	mm	
35.1	Maximum transport dimensions (length x breadth x height)	mm	
36.0	<u>Estimated weight</u>		
36.1	Core and coils	Kg	
36.2	Tank and fittings	Kg	
36.3	Radiators	Kg	
36.4	Oil	Kg	
36.5	Complete transformer	Kg	
36.6	Heaviest piece for untanking	Kg	
37.0	Whether bidirectional and flanged wheels provided ?	Yes/No	
38.0	Whether disconnecting chamber provided ?	Yes/No	
39.0	Whether all accessories and fittings provided on transformers as per specification included ?	Yes/No	

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GUARANTEED TECHNICAL PARTICULARS OF TRANSFORMERS

Sr. No.	Description	Unit	Particulars
40.0	Whether the transformer is with cable box or not	Yes/No	
B. OFFCIRCUIT LOAD TAP CHANGER (OCTC)			
1.0	Name of manufacturer and country		
2.0	Applicable standards		
3.0	Type		
4.0	Whether OCTC on primary/secondary	Primary/ Secondary	
5.0	Rated voltage	kV	
6.0	Rated current	A	
7.0	Number of steps		
8.0	Tapping steps		
9.0	Tapping range		

The above data shall be furnished for all types of Power and Distrbution Transformers.

Signature of Bidder _____

SCHEDULE -2

GUARANTEED TECHNICAL PARTICULARS OF 36 kV INDOOR SWITCHGEAR

Sr. No.	Description	Unit	Particulars
A General			
1.0	Name of manufacturer and country		
2.0	Applicable standards		
3.0	Short-time current withstand and time	kA/sec	
4.0	Dynamic rating	kAp	
5.0	Rated Voltage	kV	
6.0	<u>Clearances</u>		
6.1	Phase to phase	mm	
6.2	Between live parts and earth	mm	
7.0	Rated short duration power frequency withstand voltage	kV	
8.0	<u>Thickness of sheet steel (hot or cold rolled)</u>		
8.1	Frame	mm	
8.2	Door	mm	
8.3	Covers	mm	
9.0	<u>Dimensions (W x D x H)</u>		
9.1	Circuit breaker cubicle	mm	
9.2	Cable/VT cubicle	mm	
10.0	Drawout space required in front	mm	
11.0	Clear space required at the rear	mm	
12.0	Total weight of cubicle		
B Circuit Breaker			
1.0	Name of Manufacturer		
2.0	Type of breaker	Vacuum/SF6	
3.0	Rated current inside cubicle under site conditions	A	
4.0	Rated short-circuit breaking current	kA	
5.0	Impulse withstand voltage	kVp	
6.0	One minute power frequency withstand voltage	kV	
7.0	Rated operating duty		
8.0	<u>Time rate of contact travel</u>		
8.1	On closing	m/sec	
8.2	On tripping	m/sec	

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GUARANTEED TECHNICAL PARTICULARS OF 36 kV INDOOR SWITCHGEAR

Sr. No.	Description	Unit	Particulars
9.0	Type of contacts		
10.0	Material of contacts		
11.0	Rated line-charging breaking current	A	
12.0	Type and material of interphase barriers		
13.0	<u>Method of tripping</u>		
13.1	Normal		
13.2	Emergency		
14.0	Type of closing mechanism		
15.0	Normal voltage of closing mechanism	V	
16.0	Power required to operate closing mechanism at normal voltage	W	
17.0	Type of tripping mechanism		
18.0	Normal voltage of tripping mechanism	V	
19.0	Power consumption of trip coil	W	
20.0	<u>Spring charging motor details</u>		
20.1	Output rating	kW	
20.2	Rated voltage	V	
20.3	Class of insulation		
20.4	Spring charging time	Sec.	
21.0	Applicable standards		
C	Bus Bars		
1.0	Material		
2.0	Cross section	mm x mm	
3.0	Type of insulation		
4.0	<u>Minimum clearance</u>		
4.1	Between phases	mm	
4.2	Phase to earth	mm	
5.0	Continuous current rating	A	
6.0	Short-time current rating (1 sec.)	kA	
7.0	Temperature rise over design ambient temperature	°C	
D	Current Transformers		

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GUARANTEED TECHNICAL PARTICULARS OF 36 kV INDOOR SWITCHGEAR

Sr. No.	Description	Unit	Particulars
1.0	Name of manufacturer and country		
2.0	Applicable standards		
3.0	Class of insulation		
4.0	Temperature rise of winding over design specified ambient	□C	
5.0	Impulse withstand voltage	kVp	
6.0	One minute power frequency withstand voltage	kV	
7.0	Rated short-time current withstand (1 sec)	kA	
8.0	Whether ratio, taps, burdens, accuracies etc. are as per enclosed drawings	Yes/No	
9.0	Rated extended primary current	%	
E Voltage Transformers			
1.0	Name of manufacturer and country		
2.0	Applicable standards		
3.0	Overvoltage factor		
4.0	Class of insulation		
5.0	Temperature rise of winding over design ambient temperature	°C	
6.0	One minute power frequency withstand voltage	kV	
7.0	Impulse withstand voltage	kVp	
8.0	Whether ratio, burdens, accuracies etc. are as per enclosed drawings	Yes/No	
F. Relays Provided in the Breaker			
General			
1.0	Name & Country of Manufacturer.		
2.0	Required Auxiliary Power supply	± V AC/DC	
3.0	Standards to which the relays conform.		
4.0	All tests as specified shall be carried out.	Yes / No	
5.0	Operating temperature range	± °C	
6.0	Tropicalisation provided	Yes / No	
7.0	All auxiliary relays required with main protection relay schemes included.	Yes / No	
8.0	<u>Minimum rating of contacts for auxiliary and output relays :</u>		
	(a) Voltage	V, DC	
	(b) Continuous current	A, DC	
	(c) Make & carry for 1 sec.	A, DC	

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GUARANTEED TECHNICAL PARTICULARS OF 36 kV INDOOR SWITCHGEAR

Sr. No.	Description	Unit	Particulars
	(d) Breaking capacity (i) Resistive (ii) Inductive	Watts W	
9.0	Auxiliary CT / VT provided for input to all static relays and wherever required for electro-magnetic relays.	Yes / No	
10.0	Protection of the Relay: Over current, Earth fault and other protection		
	a) 50 - Definite time overcurrent protection	Yes / No	
	b) 51- Inverse time overcurrent protection	Yes / No	
	c) 67 - Three phase directional overcurrent	Yes / No	
	d) 49 - Thermal overload	Yes / No	
	e) 37 - Three phase undercurrent	Yes / No	
	f) 46 - Negative sequence overcurrent	Yes / No	
	g) 50N - Earthfault protection	Yes / No	
	h) 51N - IDMTL earth-fault	Yes / No	
	i) 50BF - Circuit breaker failure detection	Yes / No	
	j) 46BC - Broken conductor detection I2/I1	Yes / No	
	k) 86 - Output relay latching	Yes / No	
11.0	<u>Transformer Differential Unit</u>		
11.1	(a) Manufacturer's type / designation (b) Numerical/Static/Electromagnetic		
11.2	Rated current or (&) Voltage		
11.3	(a) Operating principles (b) Literature / Write-up enclosed	Yes / No	
11.4	Protection of Relays		
	a) 87 - High Impedence three phase differential protection	Yes / No	
	b) 87G - Restricted earth fault protection	Yes / No	
	c) 50 - Definite time overcurrent protection	Yes / No	
	d) 51- Inverse time overcurrent protection	Yes / No	
	e) 49 - Thermal over load protection	Yes / No	
	f) 59 - Over voltage Protection	Yes / No	
	g) 27 - under voltage Protection	Yes / No	
	h) 81 - Under frequency protection	Yes / No	
12.0	<u>Tripping Relays</u>		DEVICE NO. 86
12.1	(a) Manufacturer's type / designation (b) Static / Electromagnetic		
12.2	Rated voltage	V, DC	
12.3	(a) Operating Principles (b) Literature / Write-up enclosed.	Yes / No	
12.4	Adequate no. of relays provided to complete the scheme	Yes / No	
13.0	<u>Trip Circuit Supervision Relays</u>		
13.1	(a) Manufacturer's type / designation (b) Static or Electromagnetic		
13.2	Rated voltage	V, DC	
13.3	(a) Operating principles		

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GUARANTEED TECHNICAL PARTICULARS OF 36 kV INDOOR SWITCHGEAR

Sr. No.	Description	Unit	Particulars
	(b) Literature / Write-up enclosed	Yes / No	
13.4	Monitoring of breaker trip coil in both close & open position provided	Yes / No	
13.5	Safety resistors provided to limit the current if the relay coil is short-circuited	Yes / No	
14.0	<u>Indicating Lamps</u>		
14.1	Type		
14.2	Ratings		
	(a) Voltage	V	
	(b) Wattage	W	
14.3	Series resistors are provided	Yes / No	
14.4	Series resistors - ohms - W		
14.5	Life of lamp in burning hours	Hrs.	
15.0	<u>Annunciators</u>		
15.1	Make		
15.2	Dimensions of each window (L x W x H)	Mm	
15.3	No. of lamps per window		
15.4	Lamps - V - W		
15.5	Initiating contact requirements		
	(a) Making current	A	
	(b) Impulse duration	ms	
16.0	<u>Indicating Meters</u>		
16.1	Make		
16.2	Type of movement		
16.3	Type designation		
16.4	CT / VT sec. current / Volt	A, V	
16.5	Burden :		
	(a) Current coil	VA	
	(b) Voltage coil	VA	
16.6	Details of shunt, if any		

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GUARANTEED TECHNICAL PARTICULARS OF 36 kV INDOOR SWITCHGEAR

Sr. No.	Description	Unit	Particulars
(a)	Rated current	A	
(b)	Rated voltage drop	V	
16.7	Accuracy class & standard.		
16.8	Total deflection angle	Degrees	
16.9	Total scale length	mm	
16.1	Suitable for specified reference operating conditions	Yes / No	
17.0	<u>Multifunction meter</u>		
17.1	Make		
17.2	Type of measurement (3 phase, 3 wire unbalanced power / 3 phase, 4 wire unbalanced power)		
17.3	Measuring range in primary watts.		
17.3.1	CT ratio	A/A	
17.3.2	VT ratio	V/V	
17.4	Accuracy and standard to which meter conforms :		
17.5	Burden		
(a)	Current coil	VA	
(b)	Voltage coil	VA	
17.6	No. of digits in the meter		
17.7	Impulse contact for remote summation or printing provided or connectivity with the plant computer provided		
17.8	Details of impulse contacts		
(a)	Impulse frequency	No. per sec.	
(b)	Duration	ms	
(c)	Contact rating	W,V	
17.9	Mounting details		
17.10	Literature with connection diagram furnished	Yes / No	
18.0	<u>Deviations</u>		
	All deviations from specifications submitted separately.	Yes / No	
	Compliance will be taken for granted if the deviation is not specifically mentioned.		

Signature of Bidder _____

SCHEDULE - 3

GUARANTEED TECHNICAL PARTICULARS OF 11 kV INDOOR SWITCHGEAR

Sr. No.	Description	Unit	Particulars
A General			
1.0	Name of manufacturer and country		
2.0	Applicable standards		
3.0	Short-time current withstand and time	kA/sec	
4.0	Dynamic rating	kAp	
5.0	Rated Voltage	kV	
6.0	<u>Clearances</u>		
6.1	Phase to phase	mm	
6.2	Between live parts and earth	mm	
7.0	Rated short duration power frequency withstand voltage	kV	
8.0	<u>Thickness of sheet steel (hot or cold rolled)</u>		
8.1	Frame	mm	
8.2	Door	mm	
8.3	Covers	mm	
9.0	<u>Dimensions (W x D x H)</u>		
9.1	Circuit breaker cubicle	mm	
9.2	Cable/VT cubicle	mm	
10.0	Drawout space required in front	mm	
11.0	Clear space required at the rear	mm	
12.0	Total weight of cubicle		
B Circuit Breaker			
1.0	Name of Manufacturer		
2.0	Type of breaker	Vacuum/SF6	
3.0	Rated current inside cubicle under site conditions	A	
4.0	Rated short-circuit breaking current	kA	
5.0	Impulse withstand voltage	kVp	
6.0	One minute power frequency withstand voltage	kV	
7.0	Rated operating duty		
8.0	<u>Time rate of contact travel</u>		
8.1	On closing	m/sec	
8.2	On tripping	m/sec	

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GUARANTEED TECHNICAL PARTICULARS OF 11 kV INDOOR SWITCHGEAR

Sr. No.	Description	Unit	Particulars
9.0	Type of contacts		
10.0	Material of contacts		
11.0	Rated line-charging breaking current	A	
12.0	Type and material of interphase barriers		
13.0	<u>Method of tripping</u>		
13.1	Normal		
13.2	Emergency		
14.0	Type of closing mechanism		
15.0	Normal voltage of closing mechanism	V	
16.0	Power required to operate closing mechanism at normal voltage	W	
17.0	Type of tripping mechanism		
18.0	Normal voltage of tripping mechanism	V	
19.0	Power consumption of trip coil	W	
20.0	<u>Spring charging motor details</u>		
20.1	Output rating	kW	
20.2	Rated voltage	V	
20.3	Class of insulation		
20.4	Spring charging time	Sec.	
21.0	Applicable standards		
C	Bus Bars		
1.0	Material		
2.0	Cross section	mm x mm	
3.0	Type of insulation		
4.0	<u>Minimum clearance</u>		
4.1	Between phases	mm	
4.2	Phase to earth	mm	
5.0	Continuous current rating	A	
6.0	Short-time current rating (1 sec.)	kA	
7.0	Temperature rise over design ambient temperature	°C	
D	Current Transformers		

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GUARANTEED TECHNICAL PARTICULARS OF 11 kV INDOOR SWITCHGEAR

Sr. No.	Description	Unit	Particulars
1.0	Name of manufacturer and country		
2.0	Applicable standards		
3.0	Class of insulation		
4.0	Temperature rise of winding over design specified ambient	□C	
5.0	Impulse withstand voltage	kVp	
6.0	One minute power frequency withstand voltage	kV	
7.0	Rated short-time current withstand (1 sec)	kA	
8.0	Whether ratio, taps, burdens, accuracies etc. are as per enclosed drawings	Yes/No	
9.0	Rated extended primary current	%	
E Voltage Transformers			
1.0	Name of manufacturer and country		
2.0	Applicable standards		
3.0	Overvoltage factor		
4.0	Class of insulation		
5.0	Temperature rise of winding over design ambient temperature	°C	
6.0	One minute power frequency withstand voltage	kV	
7.0	Impulse withstand voltage	kVp	
8.0	Whether ratio, burdens, accuracies etc. are as per enclosed drawings	Yes/No	
F. Relays Provided in the Breaker			
General			
1.0	Name & Country of Manufacturer.		
2.0	Required Auxiliary Power supply	± V AC/DC	
3.0	Standards to which the relays conform.		
4.0	All tests as specified shall be carried out.	Yes / No	
5.0	Operating temperature range	± °C	
6.0	Tropicalisation provided	Yes / No	
7.0	All auxiliary relays required with main protection relay schemes included.	Yes / No	
8.0	<u>Minimum rating of contacts for auxiliary and output relays :</u>		
	(a) Voltage	V, DC	
	(b) Continuous current	A, DC	
	(c) Make & carry for 1 sec.	A, DC	

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GUARANTEED TECHNICAL PARTICULARS OF 11 kV INDOOR SWITCHGEAR

Sr. No.	Description	Unit	Particulars
	(d) Breaking capacity (i) Resistive (ii) Inductive	Watts W	
9.0	Auxiliary CT / VT provided for input to all static relays and wherever required for electro-magnetic relays.	Yes / No	
10.0	Protection of the Relay: Over current, Earth fault and other protection		
	a) 50 - Definite time overcurrent protection	Yes / No	
	b) 51- Inverse time overcurrent protection	Yes / No	
	c) 67 - Three phase directional overcurrent	Yes / No	
	d) 49 - Thermal overload	Yes / No	
	e) 37 - Three phase undercurrent	Yes / No	
	f) 46 - Negative sequence overcurrent	Yes / No	
	g) 50N - Earthfault protection	Yes / No	
	h) 51N - IDMTL earth-fault	Yes / No	
	i) 50BF - Circuit breaker failure detection	Yes / No	
	j) 46BC - Broken conductor detection I2/I1	Yes / No	
	k) 86 - Output relay latching	Yes / No	
11.0	<u>Transformer Differential Unit</u>		
11.1	(a) Manufacturer's type / designation (b) Numerical/Static/Electromagnetic		
11.2	Rated current or (&) Voltage		
11.3	(a) Operating principles (b) Literature / Write-up enclosed	Yes / No	
11.4	Protection of Relays		
	a) 87 - High Impedance three phase differential protection	Yes / No	
	b) 87G - Restricted earth fault protection	Yes / No	
	c) 50 - Definite time overcurrent protection	Yes / No	
	d) 51- Inverse time overcurrent protection	Yes / No	
	e) 49 - Thermal over load protection	Yes / No	
	f) 59 - Over voltage Protection	Yes / No	
	g) 27 - under voltage Protection	Yes / No	
	h) 81 - Under frequency protection	Yes / No	
12.0	<u>Tripping Relays</u>		DEVICE NO. 86
12.1	(a) Manufacturer's type / designation (b) Static / Electromagnetic		
12.2	Rated voltage	V, DC	
12.3	(a) Operating Principles (b) Literature / Write-up enclosed.	Yes / No	
12.4	Adequate no. of relays provided to complete the scheme	Yes / No	
13.0	<u>Trip Circuit Supervision Relays</u>		
13.1	(a) Manufacturer's type / designation (b) Static or Electromagnetic		
13.2	Rated voltage	V, DC	
13.3	(a) Operating principles		

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GUARANTEED TECHNICAL PARTICULARS OF 11 kV INDOOR SWITCHGEAR

Sr. No.	Description	Unit	Particulars
	(b) Literature / Write-up enclosed	Yes / No	
13.4	Monitoring of breaker trip coil in both close & open position provided	Yes / No	
13.5	Safety resistors provided to limit the current if the relay coil is short-circuited	Yes / No	
14.0	<u>Indicating Lamps</u>		
14.1	Type		
14.2	Ratings		
	(a) Voltage	V	
	(b) Wattage	W	
14.3	Series resistors are provided	Yes / No	
14.4	Series resistors - ohms - W		
14.5	Life of lamp in burning hours	Hrs.	
15.0	<u>Annunciators</u>		
15.1	Make		
15.2	Dimensions of each window (L x W x H)	Mm	
15.3	No. of lamps per window		
15.4	Lamps - V - W		
15.5	Initiating contact requirements		
	(a) Making current	A	
	(b) Impulse duration	ms	
16.0	<u>Indicating Meters</u>		
16.1	Make		
16.2	Type of movement		
16.3	Type designation		
16.4	CT / VT sec. current / Volt	A, V	
16.5	Burden :		
	(a) Current coil	VA	
	(b) Voltage coil	VA	
16.6	Details of shunt, if any		

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GUARANTEED TECHNICAL PARTICULARS OF 11 kV INDOOR SWITCHGEAR

Sr. No.	Description	Unit	Particulars
(a)	Rated current	A	
(b)	Rated voltage drop	V	
16.7	Accuracy class & standard.		
16.8	Total deflection angle	Degrees	
16.9	Total scale length	mm	
16.1	Suitable for specified reference operating conditions	Yes / No	
17.0	<u>Multifunction meter</u>		
17.1	Make		
17.2	Type of measurement (3 phase, 3 wire unbalanced power / 3 phase, 4 wire unbalanced power)		
17.3	Measuring range in primary watts.		
17.3.1	CT ratio	A/A	
17.3.2	VT ratio	V/V	
17.4	Accuracy and standard to which meter conforms :		
17.5	Burden		
(a)	Current coil	VA	
(b)	Voltage coil	VA	
17.6	No. of digits in the meter		
17.7	Impulse contact for remote summation or printing provided or connectivity with the plant computer provided		
17.8	Details of impulse contacts		
(a)	Impulse frequency	No. per sec.	
(b)	Duration	ms	
(c)	Contact rating	W,V	
17.9	Mounting details		
17.10	Literature with connection diagram furnished	Yes / No	
18.0	<u>Deviations</u>		
	All deviations from specifications submitted separately.	Yes / No	
	Compliance will be taken for granted if the deviation is not specifically mentioned.		

Signature of Bidder _____

SCHEDULE -4

GUARANTEED TECHNICAL PARTICULARS OF CABLES

Sr. No.	Description	Unit	Particulars
1.0	Name of manufacturer and country		
2.0	Applicable standards		
3.0	Rated voltage	V	
4.0	<u>Conductor</u>		
4.1	Material		
4.2	Cross sectional area	mm ²	
4.3	Whether stranded	Yes/No	
5.0	<u>Insulation</u>		
5.1	Material		
5.2	Thickness	mm	
6.0	<u>Inner sheath</u>		
6.1	Material		
6.2	Whether extruded or wrapped ?		
6.3	Thickness	mm	
7.0	<u>Outer Sheath</u>		
7.1	Material		
7.2	Thickness	mm	
8.0	Material of armour		
9.0	Whether round wire or tape ?		
10.0	Details of screen, if any		
11.0	Total overall diameter of cable	mm	
12.0	DC resistance at 20°C	ohms/km	
13.0	<u>Test voltage</u>		
13.1	One minute power frequency withstand voltage	kV	
13.2	Impulse withstand voltage	kVp	

SCHEDULE -4

GUARANTEED TECHNICAL PARTICULARS OF CABLES

Sr. No.	Description	Unit	Particulars
13.3	Water immersion test voltage	kV	
14.0	Type of cable end sealing		
15.0	<u>Cable drums</u>		
15.1	Dimensions	mm	
15.2	Weight	kg	
15.3	Nominal length per drum	m	

Bidder shall furnish the above data for each rating/size of MV/ LV Cable and control cable

Signature : _____

SCHEDULE - 5

**GUARANTEED TECHNICAL PARTICULARS OF
BATTERY AND BATTERY CHARGER**

Sr. No.	Description	Unit	Particulars
1.0	Name of Manufacturer and country		
2.0	Applicable standards		
3.0	Battery type		
4.0	Rated voltage per cell	V	
5.0	<u>Rated voltage of the battery</u>	V	
6.0	<u>Capacity at 10 hour rate of discharge at 27°C</u>		
	Initial	AH	
	Rated	AH	
	End of life	AH	
7.0	Type of positive plates		
8.0	Battery capacity at following rates of discharge :		
	1 minute	AH	
	1 hour	AH	
	2 hours	AH	
9.0	Maximum momentary current	A	
10.0	Float charging voltage per cell	V	
11.0	Float charging current	A	
12.0	Boost charging voltage per cell	V	
13.0	Boost charging current	A	
14.0	Maximum time for boost charging	minutes	
15.0	<u>Cell type</u>		
16.0	Container type		
17.0	Overall dimensions of cell L x B x H)	mm	
18.0	Overall dimension of the battery (L x B x H)	mm	
19.0	Single/ Double tier		
20.0	Weight of complete battery	kg	
21.0	Short circuit current for battery terminal fault	kA	
22.0	Expected life of battery	hours	
B	Battery Charger		
1.0	Name of manufacturer and country		

SCHEDULE - 5

**GUARANTEED TECHNICAL PARTICULARS OF
BATTERY AND BATTERY CHARGER**

Sr. No.	Description	Unit	Particulars
		Unit	Particulars
2.0	Applicable Standards		
3.0	Rated voltage	V	
4.0	Rated output	kW	
5.0	Overload capacity after operation for 10 hours at rated load		
	For 1 minute	A	
	For 2 hours	A	
6.0	Maximum charging current, battery charger is capable for		
	Float charging	A	
	Boost charging	A	
7.0	Boost charging voltage range	V	
8.0	Float charging voltage range	V	
9.0	Voltage regulation	%	
10.0	Charger efficiency at		
	Rated load	%	
	50% load	%	
11.0	Power factor at		
	Rated load	%	
	50% load	%	
12.0	Ripple Content at rated load		
	with battery connected	%	
	without battery connected	%	
13.0	Dimensions of battery charger (Lx B x H)	mm	
14.0	Total weight	kg	
15.0	Degree of protection of enclosure		
16.0	Colour Finish shade of Panel		
	Interior		
	Exterior		
17.0	Type and thickness of sheet steel (hot / cold rolled) Frame / Door / - / mm		

Signature of Bidder _____