

Laboratory Central Power Research Institute, Regional Testing Laboratory (RTL),
 No. 3A, Institutional Area, Sector-62, Noida, Uttar Pradesh
Accreditation Standard ISO/IEC 17025: 2005
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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
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CHEMICAL TESTING

I.	LUBRICANTS			
1.	Mineral Insulating Oil In Equipment / New Insulating Oil	Interfacial tension	IS 6104 IS 1866 Cl. No. 7.7	Upto 80 mN/m
		Flash Point	IS 1448 (Part 21) IS 1866 CL. No. 7.9	100°C to 200 °C
		Neutralization value	IS 1448 (Part 2) IS 1866 Cl. No. 7.4	Upto 2.0 mg KOH/g
		Water content	IS 13567 IS 1866 Cl. No. 7.3	Upto 400 mg/kg
		Sediment & sludge	IS 1866 Annexure A IS 1866 Cl. 7.5	Upto 1.0 % by wt.
		Dissolved gas analysis	IS 9434 IS 1866 Cl. No. 7.8	1µl to 5,000 µl 1µl to 5,000 µl 1µl to 5,000 µl 1µl to 5,000 µl 5µl to 5,000 µl 25µl to 5,000 µl 25µl to 5,000 µl 50µl to 50,000 µl 50µl to 1,00,000 µl
		Electric Strength	IS 6792 IS1866 Cl. No. 7.2	5 kV to 100 kV
		Dielectric Dissipation factor	IS 6262 IS 1866 Cl. No. 7.6	0.00001 to 1
		Specific Resistance	IS 6103 IS:1866 CL. No. 7.6	10 ⁹ Ω-cm to 10 ¹⁶ Ω-cm

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ELECTRICAL TESTING

I.	CABLES AND ACCESSORIES			
1.	Power cables with extruded insulation and their accessories for rated voltages 6 kV up to 30 kV Accessories for cables with rated voltage from 6 kV up to 30 kV XLPE Insulated PVC sheathed Cables For working voltages from 3.3 kV up to and including 33 kV Elastomer Insulated Flexible Cables for use in Mines Elastomer Insulated Cables for working voltages from 3.3 kV up to and	Partial discharge Test	IEC 60502 Part II-2014 Cl.18 IEC 60502-4-2010 (Cl.12) IS 7098 Part II, 2011Am.1 (Cl.19, 20.2) BS 6622-2007 (Cl.15) IS 14494-1998 (Cl.25) IS 9968 Pt. 2-2002,Am1, Am 2 (Cl.18)	1 pC to 100 nC

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	including 33 kV Polymeric Cables for working voltages from 6.6 kV up to and including 33 kV		IS 13573-2011 (table-3,4,5) & part-III- 2011 (Cl.7)	1 pC to 100000 pC
	PVC insulated (Heavy Duty) Electric Cables for working voltages from 3.3kV up to and including 11 kV Partial discharge measurements in Instrument Transformers		IS 10810 Pt. 45-84,IEC 60885-2,IS 1554 Part II-1988,Aml, Am II,Am III (Cl.18) IS 11322-1985	1 pC to 100000 pC 1 pC to 100000 pC
2.	Power cables with extruded insulation and their accessories for rated voltages 6 kV up to 30 kV Elastomer Insulated Flexible Cables for use in Mines Elastomer Insulated Cables for working voltages from 3.3 kV up to and	Electrical Heat cycle test /Load Cycle Test/ For Cable Joints	IEC 60502 part II-2014 (Cl.18) IEC 60502-4-2010 (Table5,6,7) IS 7098 Part II, 2011 Amd.1 (Cl.19) IS 9968 Pt. 2-2002,AM1,AM2 (Cl.18) IS 13573-2011 Part-1 (Table3,4,5), Part-II (Table3,4,5) & Part III-2011 (Cl.9)	1 kV to 60 kV 1 A to 2000 A

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	including 33 kV Joints and Termination of Polymeric Cables for working voltages from 6.6 kV up to and including 11 kV		IS 10810 Pt.49-84	
	PVC insulated (Heavy Duty) Electric Cables for working voltages from 3.3 kV up to and including 11 kV		IS 1554 Part II-1988, RA 2005 Amd. I, II, II (Cl.18)	
3.	Power cables with extruded insulation and their accessories- Cables for rated voltages 1 kV up to 3 Kv Cables for rated voltages from 6 kV up to 30 kV XLPE Insulated PVC sheathed Cables for working voltages up to and including 1.1 kV	Conductor Resistance Test/Armour resistivity	IEC 60502 Part I-2009 (Cl.16) (Cl.17) IEC 60502 part II-2014 (Cl.17) IS 7098 Part I-1988 RA 2005 (Amd.1-4) Cl.15	0.2 μΩ to 11 Ω

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	XLPE Insulated PVC sheathed Cables for working voltages from 3.3 kV up to and including 33 kV		IS 7098 Part II, 2011, Amd.1 (Cl.19) BS 6622-2007 (Cl.17.3)	
	Elastomer Insulated Flexible Cables for use in Mines		IS 14494-1998 (Cl.25)	
	Elastomer Insulated Cables for working voltages up to and including 1100 V		IS 9968 Pt. 1-1988, Am I, Am2,(Cl.21)	
	Elastomer Insulated Cables for working voltages from 3.3 kV up to and including 33 kV		IS 9968 Pt. 1-1988, Am I, Am2,(Cl.21)	
	Joints and Termination of Polymeric Cables for working voltages from 6.6 kV up to and including 11 kV		IS 13573-2011 Part-1 Part-II (Table3,4,5) & Part III-2011 (Cl.9)	
	Aerial Bunched Cables – for		IS 14255-1995 Am1. (Cl.10)	

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	<p>working voltages up to and including 1100 Volts</p> <p>600/1000 V & 1900/3300 V armoured electric cables having thermosetting insulation Having PVC insulation</p> <p>ACSR conductor</p> <p>AAA Conductor</p>		<p>BS 5467- 2016 (Cl.14)</p> <p>BS 6346- 1997</p> <p>IS 398-1/1996 RA 2002 IS 398-2/1996 RA 2002 IS 398-4/1994 RA 2004</p>	
4.	<p>Power cables with extruded insulation and their accessories for rated voltages 6 kV up to 30 kV</p> <p>XLPE Insulated PVC sheathed Cables For working voltages from 3.3 kV up to and including 33KV</p> <p>Elastomer Insulated Flexible Cables for use in</p>	Capacitance Measurement	<p>IEC 60502 part II-2014 (Cl.18)</p> <p>IS 7098 Part II, 2011 Amd.1 (Cl.19) BS 6622-2007 (Cl.16)</p> <p>IS 14494-1998 (Cl.25)</p>	10 pF to 1100 µF

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	<p>Mines</p> <p>Elastomer Insulated Cables for working voltages from 3.3 kV up to and including 33 kV</p> <p>PVC insulated (Heavy Duty) Electric Cables from 3.3 kV up to and including 11 kV</p> <p>Paper Insulated Lead Sheathed Cables for rated Voltages up to and including 33 Kv</p>		<p>IS 9968 Pt.2-2002,AM1,AM2 (Cl.18)</p> <p>IS 1554 Part II-1988, RA 2005 (Cl.18)</p> <p>IS 692-1994, Am1, Am2 (Cl.24)</p>	
5.	<p>Power cables with extruded insulation and their accessories for rated voltages 6 kV up to 30 kV</p> <p>XLPE Insulated PVC sheathed Cables For working voltages</p>	Tan Delta Measurement	<p>IEC 60502 part II-2014 (Cl.18)</p> <p>IS 7098 Part II, 2011Amd. 1, (Cl.19)</p>	

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	<p>from 3.3 kV up to and including 33 kV</p> <p>Elastomer Insulated Flexible Cables for use in Mines</p> <p>Elastomer Insulated Cables for working voltages from 3.3 kV up to and including 33 kV</p> <p>PVC insulated (Heavy Duty) Electric Cables from 3.3 kV up to and including 11 kV</p> <p>Paper Insulated Lead Sheathed Cables for rated Voltages up to and including 33 kV</p>		<p>IS 14494-1998 (Cl.25)</p> <p>IS 9968 Pt.2-2002,AM1,AM2 (Cl.18)</p> <p>IS 1554 Part II-1988/ RA 2005 (Cl.18)</p> <p>IS 692-1994, Am1, Am2 (Cl.24)</p>	
6.	PVC insulated (Heavy Duty) Electric Cables for working voltages up to and including 1100	DC withstand Test	IS 1554 Part I-1988, RA 2005 Amd. 1-5, (Cl.15)	0.1 kV to 5 kV

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	Volts PVC insulated Cables for working voltages up to and including 1100 volts		IS 694- 2010 AMd. 1-3 (Cl.15) BS -6004-2012 (Cl.7)	
7.	Power cables with extruded insulation and their accessories for rated voltages 1 kV up to 3 kV Cables for rated voltages from 6 kV up to 30 kV Cables with rated voltage from 6 kV up to 10 kV XLPE Insulated PVC sheathed Cables for working voltages up to 1.1 kV For working voltages from 3.3 kV up to and including 33 kV	Power Frequency Withstand Test/ Dielectric strength	IEC 60502 Part I-2009 (Cl.17) IEC 60502 part II-2014 (Cl.18) IEC 60502 Part IV-2010 (Table 5,6 and 7) IS 7098 Part I-1988 RA 2005 Amd. 1-3, (Cl.16) IS 7098 Part II, 2011 Amd.1 (Cl.19)	0.1 kV to 5 kV

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	Elastomer Insulated Cables for working voltages up to and including 1100 Volts Elastomer Insulated Cables for working voltages from 3.3 kV up to and including 33 kV Aerial Bunched Cables – For working voltages up to and including 1100 Volts Joints and Termination of Polymeric Cables for working voltages from 6.6 kV up to and including 33 kV PVC insulated (Heavy Duty) Electric Cables for working voltages up to and including 1100 Volts From 3.3 kV up to		IS 14494-1998 (Cl.25) IS 9968 Pt.1-1988 Am I Am2 (Cl.21) IS 14255-1995 (Cl.10) IS 13573- 2011 (Table 3,4,5) & Part –III -2011 (Cl.4.2) IS 1554 Part I-1988, RA 2005 Amd. 1-3 (Cl.18) IS 1554 Part II-1988,Amd. 1-3 RA 2005 (Cl.18)	

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	<p>and including 11kV</p> <p>PVC insulated Cables for working voltages up to and including 1100 volts</p> <p>Paper Insulated Lead Sheathed Cables for rated Voltages up to and including 33 kV</p> <p>Polyvinyl Chloride Insulated Cables of rated Voltages up to and including 450/750 Volts 600/1000 V and 1900/3300 V armoured electric cables having PVC Insulation</p> <p>600/1000 V and 1900/3300 V armoured electric cables having thermosetting Insulation</p>		<p>IS 694- 2010 Amd. 1-3 (Cl.15) BS 6004-2012 (Cl.7)</p> <p>IS 692-1994, Am I, Am II (Cl.24) BS 6480-1988, Aml,Am II (Cl.19)</p> <p>BS 6346-1997</p> <p>BS 5467-1997</p>	

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	Insulating mat for Electrical Purposes		IS: 15652 – 2006 Amt. No. 1, Amt. No. 2	
8.	<p>Power cables with extruded insulation and their accessories for rated voltages 1 kV up to 3 kV</p> <p>Cables for rated voltages from 6 kV up to 30 kV</p> <p>XLPE Insulated PVC sheathed Cables for voltages up to and including 1.1kV</p> <p>Voltages from 3.3 kV up to and including 33 kV</p> <p>Elastomer Insulated Flexible Cables for use in Mines</p> <p>Elastomer Insulated Cables for working voltages Up to and including 1100 Volts</p>	Dimension of Armour Material	<p>IEC 60502 part I-2009 (Cl.18)</p> <p>IEC 60502 part II-2014 (Cl.18)</p> <p>IS 7098 Part I-1988, RA 2005 Amd. 1-3 (Cl.16)</p> <p>IS 7098 Part II, 2011 Amd. 1 (Cl.19)</p> <p>IS 14494-1998</p> <p>IS 9968 Pt. 1-1988, Am I, AM2 (Cl.21)</p>	0.001 mm to 5 mm

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	Elastomer Insulated Cables for working voltages from 3.3 kV up to and including 33 kV		IS 9968 Pt. 2-2002,AM1AM2 (Cl.21)	
	PVC insulated (Heavy Duty) Electric Cables for working voltages up to and including 1100 Volts		IS 1554 Part I-1988, RA 2005 Amd. 1-3, (Cl.15)	
	PVC insulated (Heavy Duty) Electric Cables From 3.3 kV up to and including 11kV		IS 1554 Part II-1988, RA 2005 Amd. 1-3, (Cl.18)	
	ACSR conductor AAA Conductor		IS 398-1/1996 RA 2002 IS 398-2/1996 RA 2002 IS 398-4/1994 RA 2004	
9.	Elastomer Insulated Flexible Cables for use in Mines Elastomer Insulated Cables for working voltages Up to and	Water Absorption (Electrical)	IS 14494-1998 (Cl.25) IS 9968 Pt. 1-1988, Am I,AM2 (Cl.21)	1 kV to 60 kV 10 pF to 1100pF

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	<p>including 1100 Volts</p> <p>Elastomer Insulated Cables for working voltages from 3.3 kV up to and including 33 kV</p> <p>PVC / XLPE cables up to and including 33 kV</p> <p>Elastomer Insulation & Sheath of electric Cables</p> <p>Common Test methods insulating and sheathing materials of electric Cables</p>		<p>IS 9968 Pt. 2-2002,am1,a m2 (Cl.21)</p> <p>NEMA WC 70 NEMA WC 53</p> <p>IS 6380- 1984, Aml</p> <p>IEC 60811-402 IEC 60811-502 IEC 60811-503 IEC 60811-506</p>	
10.	<p>Power cables with extruded insulation and their accessories for rated voltages 1 kV up to 3 kV</p> <p>Cables for rated voltages from 6 kV up to 30 kV</p>	Water Absorption (Gravimetric)	<p>IEC 60502 part I-2009 (Cl.18)</p> <p>IEC 60502 part II-2014 (Cl.18)</p>	0.1 mg to 220 g

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	<p>XLPE Insulated PVC sheathed</p> <p>Cables for voltages up to and including 1.1kV</p> <p>For working voltages from 3.3 kV up to and including 33 kV</p> <p>Common Test methods insulating and sheathing materials of electric Cables</p> <p>PVC insulated (Heavy Duty) Electric Cables for working voltages from 3.3 kV up to and including 11kV</p>		<p>IS 7098 Pt. 1-1988, RA 2005 Amd. 1-3, (Cl.16)</p> <p>IS 7098 Part II, 2011Amd. 1 (Cl.19)</p> <p>IEC 60811-402/2012</p> <p>IS 1554 Part II-1988, RA 2005 Amd. 1-3, (Cl.18)</p>	
11.	<p>XLPE Insulated PVC sheathed Cables fr voltages up to and including 1.1 kV</p> <p>For working voltages from 3.3 kV up to and including 33 kV</p>	Wrapping Test/ Bending Test/ Winding Test	<p>IS 7098 Pt.1-1988, RA 2005 Amd. 1-3 (Cl.16)</p> <p>IS 7098 Part II, 2011 Amd. 1 (Cl.19)</p>	Qualitative

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	Elastomer Insulated Flexible Cables for use in Mines		IS 14494-1998 (Cl.25)	
	Elastomer Insulated Cables for working voltages Up to and including 1100 Volts		IS 9968 Pt. 1-1988, Am I, AM2 (Cl.21)	
	Elastomer Insulated Cables for working voltages from 3.3 kV up to and including 33 kV		IS 9968 Pt. 2-2002,am1, am2 (Cl.21)	
	Aerial Bunched Cables – Voltages up to and including 1100 Volts		IS 14255-1995 (Cl.25)	
	600/1000 V and 1900/3300 V armoured electric cables Having PVC Insulation		BS 6346 – 1997	
	Having thermosetting Insulation		BS 5467-1997	
	Test methods for Wrapping test for		IS 10810 P.3, 39 & 50-1984	

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	<p>Aluminium conductor, Winding Test on Armour & Bending Test for Cables</p> <p>PVC insulated (Heavy Duty) Electric Cables for working voltages up to and including 1100 Volts</p> <p>From 3.3 kV up to and including 11kV</p> <p>Mild Steel wires, Formed wires And tapes for armouring of Cables</p> <p>ACSR Conductor AAA Conductor</p>		<p>IS 1554 Part I-1988, RA 2005 (Cl.15.1)</p> <p>IS 1554 Part II-1988, RA 2005 (Cl.15.1)</p> <p>IS 3975-1999 (Cl.8.3)</p> <p>IS 398-1/1996 RA 2002 IS 398-2/1996 RA 2002 IS 398-4/1994 RA 2004</p>	
12.	<p>XLPE Insulated PVC sheathed Cables for voltages up to and including 1.1kV</p> <p>For working voltages from 3.3</p>	Galvanising test (Uniformity of Zinc coating & Mass of Zinc coating)	<p>IS 7098 Pt.1-1988- RA 2005 Amd. 1-3 (Cl.16)</p> <p>IS 7098 Part II, 2011 Amd. 1 (Cl.19)</p>	0.1 mg to 220 g

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	kV up to and including 33 kV Elastomer Insulated Flexible Cables for use in Mines			
	Elastomer Insulated Cables for working voltages Up to and including 1100 Volts		IS 14494-1998 IS 9968 Pt. 1-1988, Am I, AM2 (Cl.25)	
	Elastomer Insulated Cables for working voltages from 3.3 kV up to and including 33 kV		IS 9968 Pt. 2-2002,AM1, AM2 (Cl.21)	
	PVC insulated Cables for Electric Supply for working voltages up to and including 1100 Volts. From 3.3 kV up to and including 11kV		IS 1554 Part I-1988, RA 2005 Amd. 1-3 (Cl.15) IS 1554 Part II-1988, RA 2005 Amd. 1-3 (Cl.18)	
	Mild Steel wires, Formed wires And		IS 3975-1999 (Cl.9) IS 4826-1979	

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	tapes for armouring of cables Hot Dipped Galvanised coating on round steel wires ACSR Conductor AAA Conductor		Am I, Am II, Am III IS 10810 Part 40-41 -1984 IS 398-1/1996 RA 2002 (Cl.13.1) IS 398-2/1996 RA 2002 (Cl.14.1) IS 398-4/1994 RA 2004	
13.	Power cables with extruded insulation and their accessories- Cables for rated voltages 1 kV up to 3kV Cables for rated voltages from 6 kV up to 30 kV XLPE Insulated PVC sheathed Cables for voltages up to and including 1.1 kV For working voltages from 3.3	Thickness and dimension test	IEC 60502 part I-2009 (Cl.18) IEC 60502 part II-2014 (Cl.18) IS 7098 Part I-1988 RA 2005 Amd 1-3 (Cl.16) IS 7098 Part II, 2011 Amd.1 (Cl.19)	0.01 mm to 150 mm

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	kV up to and including 33 kV			
	Elastomer Insulated Flexible Cables for use in Mines		IS 14494-88 (Cl.25)	
	Elastomer Insulated Cables for working voltages Up to and including 1100 Volts		IS 9968 Pt. 1-88 Am I ,Am2 (Cl.18)	
	Elastomer Insulated Cables for working voltages from 3.3 kV up to and including 33 kV		IS 9968 Pt. 2-2002,AM1,AM2 (Cl.18)	
	Common Test methods for insulating and sheathing materials of electric Cables		IEC 811-1-1/1993, Am I,	
	PVC insulated (Heavy Duty) Electric Cables for working voltages up to and		IS 1554 Part I-1988, RA 2005 (Cl.15)	

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	<p>including 1100 Volts</p> <p>From 3.3 kV up to and inclu. 11 kV</p> <p>Electric Insulating Mat</p> <p>PVC insulated Cables for working voltages up to and including 1100 Volts</p> <p>Aerial Bunched Cables – For working voltages up to and including 1100V</p> <p>600/100 V & 1900/3300 V armoured electric cables having thermosetting insulation</p> <p>Having PVC insulation</p>		<p>IS 1554 Part II-1988, RA 2005 (Cl.18)</p> <p>IS: 15652-2006 (Cl.6.3)</p> <p>IS 694 -2010 Amd. 1-3 (Cl.15)</p> <p>IS 14255-1995 Amd. 1 (Cl.10)</p> <p>BS 5467-2016 (Cl.14)</p> <p>BS 6346-1997</p>	
15.	Power cables with extruded	Insulation Resistance Test/ Volume resistivity/	IEC 60502 Part I-2009 (Cl.17)	1 MΩ to 100 GΩ 500 V DC

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	<p>insulation and their accessories Cables for rated voltages 1 kV up to 3 kV</p> <p>Cables for rated voltages from 6 kV up to 30 kV</p> <p>XLPE Insulated PVC sheathed Cables for voltages up to and including 1.1 kV</p> <p>For working voltages from 3.3 kV up to and including 33 kV</p> <p>Elastomer Insulated Flexible Cables for use in Mines</p> <p>Elastomer Insulated Cables for working voltages Up to and including 1100 Volts</p>	IR Constant	<p>IEC 60502 Part II-2014 (Cl.17)</p> <p>IS 7098 Part I-1988 RA 2005 Amd. 1-2, (Cl.16)</p> <p>IS 7098 Part II, 2011 Amd.1 (Cl.19)</p> <p>IS 14494-1998 (Cl.25)</p> <p>IS 9968 Pt. 1-1988, Am I, AM2 (Cl.21)</p>	

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Electric Insulating Mat		IS: 15652 – 2006	
	Elastomer Insulated Cables for working voltages from 3.3 kV up to and including 33 kV		IS 9968 Pt. 2-2002,AM1,AM2 (Cl.18)	
	PVC insulated (Heavy Duty) Electric Cables for working voltages up to and including 1100 Volts. From 3.3 kV up to and including 11kV		IS 1554 Pt 1-1988, RA 2005 Amd. 1-3 (Cl.15)	
	PVC insulated Cables for working voltages up to and including 1100 Volts		IS 1554 Part II-1988, RA 2005 (Cl.18) IS 694 – 2010 Amd. 1-3 (Cl.18)	
	PVC insulated Cables for working voltages up to and including 1100 Volts		IS 692-1994, Am II, Am III BS 6480-1988, Am I, Am II	
	Paper Insulated Lead Sheathed Cables for rated Voltages up to and including 33 kV		IS 14255-1995 (Cl.10)	

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	<p>Aerial Bunched Cables – For working voltages up to and including 1100 Volts</p> <p>Polyvinyl Chloride Insulated Cables of rated voltages up to and including 450/750 Volts</p> <p>600/100 V & 1900/3300 V armoured electric cables having thermosetting insulation</p>		<p>BS 5467- 2016 (Cl.14)</p> <p>BS 6346- 1997</p>	
15.	<p>Power cables with extruded insulation and their accessories</p> <p>Cables for rated voltages 1 kV up to 3 kV</p> <p>Cables for rated voltages from 6 kV up to 30 kV</p> <p>XLPE Insulated PVC sheathed Cables for voltages up to and</p>	<p>Ageing in air oven/ageing in air bomb/Heat shock test/Shrinkage/Loss of Mass test/Hot set Test/HO Deformation test/ Tests for resistance to Cracking/Pressure test at high temperature/ Mineral Oil Immersion Test</p>	<p>IEC 60502 Part I-2009 (Cl.18)</p> <p>IEC 60502 Part II-2014 (Cl.18)</p> <p>IS 7098 Part I-1988, RA 2005 Amd 1-3 (Cl.16)</p>	1 °C to 250 °C

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	including 1.1 kV For working voltages from 3.3 kV up to and including 33 kV Polyvinyl Chloride Insulated Cables of rated voltages upto and including 450/750 Volts 600/1000 V and 1900/3300 V armoured electric cables Having PVC Insulation Having thermosetting Insulation Elastomer Insulated Flexible Cables For use in mines Elastomer Insulated Cables for working voltages Up to and including 1100 Volts		IS 7098 Part II, 2011 Amd.1 (Cl.19) BS 6346-1997 BS 5467-2016 (Cl.14) IS 14494-1998 (Cl.10) IS 9968 Pt.1-1988, Am I,Am2 (Cl.18)	

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	<p>Elastomer Insulated Cables for working voltages from 3.3 kV up to and including 33 kV</p> <p>Test methods for Ageing/heat shock/shrinkage/ loss of mass/hot Deformation Test</p> <p>Common test methods for insulating and sheathing material of electric cables</p> <p>PVC insulated(Heavy Duty) Electric cables for working voltages up to and including 1100 Volts From 3.3 kV upto and including 11kV</p>		<p>IS 9968 PT.2-2002 AM1,AM2 (Cl.21)</p> <p>IS 10810 pt- 10,11,12,14,15,16 &30- 1984</p> <p>IEC 60811-201 IEC 60811-202 IEC 60811-203 IEC 60811-402 IEC 60811-501 IEC 60811-502 IEC 60811-503 IEC 60811-508 IEC 60811-509 IEC 60811-606</p> <p>IS 1554 part I-1988, RA 2005 (Cl.15)</p> <p>IS 1554 part II-1988, RA 2005 (Cl.15)</p> <p>I</p>	

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	<p>PVC insulated Cables upto and including 1100 Volts</p> <p>Aerial Bunched Cables - For working voltages up to and including 1100 Volts</p> <p>Electric Insulating Mat</p> <p>XLPE / PVC cables up to 600 /2000 V for Dielectric Retention test</p> <p>XLPE / PVC cables up to 33 kV for Accelerated water absorption test</p>		<p>S 694-2010 BS -6004-2000 (Cl.15)</p> <p>IS14255-1995 (Cl.10)</p> <p>IS: 15652 - 2006</p> <p>NEMA WC 5 NEMA WC 70</p> <p>NEMA WC 53 NEMA WC 70</p>	
16.	Power cables with extruded insulation and their accessories Cables for rated voltages 1 kV up to 3 kV	Mechanical Test Tensile Test/ /Breaking strength test/Tear resistance Test	IEC 60502 Part I-2009 (Cl.18)	1 N to 50 kN

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Cables for rated voltages from 6 kV up to 30 kV		IEC 60502 Part II-2014 (Cl.18)	
	XLPE Insulated PVC sheathed Cables for voltages up to and including 1.1 kV		IS 7098 Part I-1988 RA 2005 Amd. 1-3 (Cl.16)	
	For working voltages from 3.3 kV up to and including 33 kV		IS 7098 Part II, 2011 Amd.1 (Cl.19)	
	Elastomer insulated Flexible cables for use in mines		IS 14494 – 1998 (Cl.21)	
	Elastomer Insulated Flexible Cables for working voltages upto including 1100 Volts		IS 9968 Pt.1-1988,Aml,AM2 (Cl.21)	1 N - 50 kN ± 1%
	Elastomer Insulated Flexible Cables for working voltages from 3.3 kV upto including 1100 Volts		IS 9968 Pt.2-2002 AM1 , Am II (Cl.21)	

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	<p>600/100 V & 1900/3300 V armoured electric cables having thermosetting insulation</p> <p>Having PVC insulation</p> <p>Test methods for Tensile test/Tear resistance Test/ Tensile strength of elastomeric Insulation and sheath</p> <p>Common Test methods for insulating and sheathing materials of electric Cables</p> <p>Electric Insulating mat</p> <p>PVC insulated (Heavy Duty) Electric Cables for working voltages up to and including 1100 V</p>		<p>BS 5467- 2016 (Cl.14)</p> <p>BS 6346-1997</p> <p>IS 10810 Pt-10,11,12,14,15 & 16 -1984</p> <p>IEC 60811-201 IEC 60811-202 IEC 60811-203 IEC 60811-402</p> <p>IS: 15652 -2006</p> <p>IS 1554 Part I-1988 RA 2005 (Cl.15)</p>	<p>1 N - 50 kN ± 1%</p>

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	<p>From 3.3 kV up to and including 11kV</p> <p>PVC insulated Cables for working voltages up to and including 1100Volts</p> <p>Aerial Bunched Cables – For working voltages up to and including 1100Volts</p> <p>ACSR Conductor AAA Conductor</p>		<p>IS 1554 Part II-1988 RA 2005 (Cl.15)</p> <p>IS 694 -2010(Cl.15) BS -6004-2000</p> <p>IS 14255-1995 (Cl.10)</p> <p>IS 398-1/1996 RA 2002 IS 398-2/1996 RA 2002 IS 398-4/1994 RA 2004</p>	
17.	<p>PVC insulated (Heavy Duty) Electric Cables for working voltages up to and including 1100 Volts</p> <p>From 3.3 kV up to and including 11kV</p> <p>PVC insulated Cables for</p>	<p>Mechanical Test Elongation Test Annealing test</p>	<p>IS 1554 Part I-1988 RA 2005 (Cl.15)</p> <p>IS 1554 Part II-1988 RA 2005 (Cl.18)</p> <p>IS 694 – 2010 (Cl.15) BS 6004-2000</p>	<p>Upto 500% 1 mm to 250 mm</p>

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	working voltages up to and including 1100 Volts			
	Aerial Bunched Cables – For working voltages up to and including 1100Volts		IS 14255-1995 (Cl.10)	
	Power cables with extruded insulation and their accessories for rated voltages 1 kV up to 3 kV		IEC 60502 Part I-2008 (Cl.18)	
	Cables for rated voltages from 6 kV up to 30 kV		IEC 60502 Part II-2014 (Cl.18)	
	XLPE Insulated PVC sheathed Cables for voltages up to and including 1.1kV		IS 7098 Part I-1988 Am 1, AM2, Am III (Cl.16)	
	For working voltages from 3.3 kV up to and including 33 kV		IS 7098 Part II, 2011(Cl.19) BS 6622-2007	
	Elastomer Insulated Flexible		IS 14494-1998 (Cl.25)	

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	<p>Cables for use in Mines</p> <p>Elastomer Insulated Cables for working voltages Up to and including 1100 Volts</p> <p>Elastomer Insulated Cables for working voltages from 3.3 kV up to and including 11 kV</p> <p>600/100 V & 1900/3300 V armoured electric cables having thermosetting insulation</p> <p>Having PVC insulation</p> <p>ACSR Conductor</p> <p>AAA Conductor</p>		<p>IS 9968 Pt. 1-1988, Am I, AM2 (Cl.21)</p> <p>IS 9968 Pt. 2-2002,AM1 ,AM2 (Cl.21)</p> <p>BS 5467- 1997</p> <p>BS 6346-1997</p> <p>IS 398-1/1996 RA 2002 IS 398-2/1996 RA 2002 IS 398-4/1994 RA 2004</p>	
18.	Joints and Termination of Polymeric Cables for working voltages from	Mechanical Test: Impact Test	IS 13573-2011 Am I, Am II	Up to 10 kg

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19.	<p>6.6kV up to and including 33 kV</p> <p>Power cables with extruded insulation and their accessories- Cables for rated voltages 1 kV up to 3 kV</p> <p>For rated voltages from 6 kV up to 30 kV</p> <p>XLPE Insulated PVC sheathed Cables for voltages up to and including 1.1kV</p> <p>For working voltages from 3.3 kV up to and including 33 kV</p> <p>PVC insulated Cables for working voltages up to and including 100Volts From 3.3 kV up to and including 11 kV</p>	<p>Mechanical Test</p> <p>Cold Impact Test / Cold Bend Test/ Conditioning Test</p>	<p>IEC 60502 Part I-2009 (Cl.18)</p> <p>IEC 60502 Part II-2014 (Cl.18)</p> <p>IS 7098 Part I-1988, RA 2005 (Cl.16)</p> <p>IS 7098 Part II- 2011 (Cl.19)</p> <p>IS 1554 Part I-1988 RA 2005 (Cl.18)</p> <p>IS 1554 Part II-1988 RA 2005 (Cl.18)</p>	<p>Upto 10 kg (-)20 °C to 200 °C</p> <p>Upto 10kg >1kg -20°C to 200°C± 2°C</p>

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	<p>PVC insulated Cables for working voltages up to and including 1100Volts</p> <p>Common Test methods for Test at low temperature</p> <p>Electric Insulating Mat</p>		<p>IS 694 -2010 (Cl.15)</p> <p>IEC 60811- 506</p> <p>IS: 15652-2006</p>	
20.	<p>Power cables with extruded insulation and their accessories- Cables for rated voltages 1 kV up to 3 kV</p> <p>Cables for rated voltages from 6 kV up to 30 kV</p> <p>XLPE Insulated PVC sheathed Cables for voltages up to and including 1.1 kV</p> <p>For working voltages from 3.3 kV up to and</p>	Thermal Stability	<p>IEC 60502 Part I-2009 (Cl.18)</p> <p>IEC 60502 Part II-2014 (Cl.18)</p> <p>IS 7098 Part I-1988, RA 2005 (Cl.16)</p> <p>IS 7098 Part II, 2011,Am I, (Cl.19)</p>	1 °C to 200 °C

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	<p>including 33 kV</p> <p>PVC Insulation & Sheath of Electric Cables</p> <p>Common tests methods for insulating and sheathing materials of electric cables</p> <p>PVC insulated (Heavy Duty) Electric Cables for working voltages up to and including 1100 Volts</p> <p>From 3.3 kV up to and including 11 kV</p>		<p>IS 5831 – 1984, Am I, Am II</p> <p>IEC 60811- 405</p> <p>IS 1554 Part I-1988, Am I, Am II, Am III (Cl.15)</p> <p>IS 1554 Part II-1988, RA 2005 (Cl.18)</p>	
21.	<p>Elastomer Insulated Cables for working voltages Up to and including 1100 Volts</p> <p>PVC insulated (Heavy Duty) Electric Cables for working voltages</p>	Water Immersion (HVAC / DC Test)	<p>IS 9968 Part - 1-1988, Am I,Am2 (Cl.21)</p> <p>IS 1554 Part I-1988, RA 2005 (Cl.15)</p>	<p>1 kV to 20 kV ac 0.1 kV 5 kV dc</p> <p>Upto 100°C</p>

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	up to and including 1100 Volts PVC insulated Cables for working voltages up to and including 1100 Volts		IS 694 -2010 (Cl.15) BS 6004-2000 (Cl.7)	
22.	Elastomer Insulated Flexible Cables for use in Mines Elastomer Insulated Cables for working voltages Up to and including 1100 Volts Elastomer Insulated Cables for working voltages from 3.3 kV up to and including 11 kV Electric Insulating Mat PVC insulated Heavy Duty Electric Cables for working voltages	Fire resistance/ Flammability / Swedish Chimney Test/Bunched Cable Test/ Flame retardance Test for Bunched Cables	IS 14494-1998, RA 2003 (Cl.25) IS 9968 Pt. 1-1988, Am I, AmII, RA 2005 (Cl.21) IS 9968 Pt.2-2002, Am I,Am II (Cl.18) IS: 15652 – 2006 IS 1554 Pt 1-1988, RA 2005 (Cl.15)	Upto 800 °C Upto 60 s 100 mm to 3.5 m

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	<p>up to and including 1100 Volts</p> <p>PVC Cables Upto and including 1.1kV</p> <p>From 3.3 kV up to and including 11kV</p> <p>XLPE Insulated PVC sheathed Cables for voltages up to and including 1.1 kV</p> <p>For working voltages from 3.3 kV up to and including 33 kV</p> <p>Power cables with extruded insulation and their accessories for rated voltages 1 kV up to 3 kV</p> <p>Cables for rated voltages from 6 kV up to 30 kV</p>		<p>IS 694 -2010 (Cl.15)</p> <p>IS 1554 Part II-1988, RA 2005 (Cl.18)</p> <p>IS 7098 Pt 1-1988, RA 2005 (Cl.16)</p> <p>IS 7098 Part II, 2011 (Cl.15)</p> <p>IEC 60502 part I-2009 (Cl.18)</p> <p>IEC 60502 partII 2014 (Cl.18)</p>	

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	Aerial Bunched Cables – For voltages up to and including 1.1kV Polyvinyl Chloride Insulated Cables of rated Voltages upto and including 450/750 Volts		IS 14255-1995, RA 2005(CI.10)	
23.	Measurement of Smoke Density of Electric Cables burning under defined conditions- Test Apparatus Test procedure and requirements	Smoke Density Test	ASTM D 2843- 1999, RA 2004	Light Transmittance Upto 100%
24.	Measuring the minimum oxygen concentration to support candle like combustion of plastics Test methods for oxygen Index Test	Oxygen Index Test & Temperature Index test	ASTM 2863-2012 IS 10810 Pt.64-2003 IS 10810 Pt.58-1998 RA2003	2.1 % to 100% Upto 180 s Upto 150 mm
25.	Test Method for determination of the amount of halogen acid evolved during combustion of polymeric materials taken from cables	Halogen Acid Test	IS 7098 PART 1 & 2 IS 1554 PART 1 & 2 IS 694-2010 IEC 60502 1 & 2	10 °C to 800 °C 0.1 mg to 220 g

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II.	SWITCHGEAR EQUIPMENTS			
1.	H.V. Circuit Breakers and Switchgear Panel with Circuit Breaker Rating upto 132kV	Lightning impulse	IEC – 62271 – 100 Cl. No. 6.2.6.2, 6.2.7.2 and 6.3 IEC:62271 – 1 Cl. 6.2.6.2, 6.2.7.2 & Cl. 6.3 IEC:62271 – 110 Cl. 6.2.6.2, 6.2.7.2 & Cl. 6.3	15 kV to 1000 kV(peak)
	H.V. Circuit Breakers and Switchgear Panel with Circuit Breaker Rating upto 66kV	Power frequency voltage test(dry/wet)	IS 3427 Cl. 6.1.6 & 6.3 IS 14659 Cl. 6.1.6 & Cl. 6.3 IEC 62271 – 201 Cl. 6.2.6.2, 6.2.7.2 & Cl. 6.3 IEC 60529	1kV-200kV(rms)
	H.V. Circuit Breakers and Switchgear Panel with Circuit Breaker Rating	Temperature Rise test	IS 12063 Cl. 6.2.6.2, 6.2.7.2 & Cl. 6.3 IEC/TR 62271 – 308 Cl. 6.2.6.2, 6.2.7.2 & Cl. 6.3 of IEC:62271-200 BS 6581	200Amps-6kA, for 3-Phase & 5Amps-2000Amps for 1-Phase, up to 150°C
2.	H.T. Switches Rating Upto 132kV	Lightning impulse voltage withstand test	Cl.3.1, 3.2 IS 9920 – 1 IS 9920 – 2 (amd. No.1&2),	15 kV to 1000 kV(peak)
	H.T. Switches Rating Upto 66kV)	Power frequency voltage test(dry/wet)	IS 9920 – 3 IS 9920 – 4 IEC:60265 – 1	1 kV to 200 kV(rms)
	H.T. Switches	Temperature rise test	IEC:60265 – 2 with amendment No.1 Cl. 6.2.6.2, 6.2.7.2 & Cl. 6.3 IEC:62271 – 1	200 A to 6 kA, for 3-Phase 5 A to 2000 A for 1-Phase Upto 150°C
3.	Isolators and Earthing Switches Rating Upto to 132kV	Lightning impulse voltage withstand test	Cl.3.1, 3.2, IS:9921 – 1 IS:9921 – 2&3, IS:9921 – 4&5	15 kV to 1000 kV(peak)

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	Isolators and Earthing Switches Rating upto 66kV	Power frequency voltage test(dry/wet)	Cl. 6.2.6.2, 6.2.7.2 & Cl. 6.3 of IEC:62271 – 2	1 kV to 200 kV(rms)
	Isolators and Earthing Switches	Temperature rise test		200Amps-6kA, for 3-Phase & 5Amps-2000Amps for 1-Phase, up to150°C
4.	Distribution/Power Transformers including earthing transformers Rating(upto and inclusive of 1 kVA to 25 MVA) Rating(1 kV to 66 kV inclusive)	Lightning impulse voltage withstand tests	Cl. 7.3 IS 2026 – 3 Cl. No. 7.3 with Amendment No.1, , IEC:60076 – 3	15 kV to 1000 kV(peak)
5.	H.T. Fuses Rating upto 33 kV	Lightning impulse voltage withstand test	Cl. 6.3 & 6.4 of IS:9385 – 1 to 4 Cl. 6.4 & 6.5 of IEC:60282 – 1, Cl. 8.4 & 8.5 IEC:60282 – 2	15 kV to 1000 kV(peak)
		Power frequency voltage test(dry/wet)	Cl. 6.3 & 6.4 of IS:9385 – 1 to 4 Cl. 6.4 & 6.5 of IEC:60282 – 1, Cl. 8.4 & 8.5 IEC:60282 – 2	1 kV to 200 kV(rms)
	H.T. Fuses	Temperature rise test		200Amps-6kA, for 3-Phase & 5Amps-2000Amps for 1-Phase, up to 150°C
8.	Busduct, Panels Range Upto 33 kV	Lightning impulse voltage withstand test	Cl. 8.21 & 8.2.2 IS:8623 (Part – 1) IS:8623 (Part – 2)	15 kV to 1000 kV(peak)

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		High voltage power frequency test	Cl. 10.9 & 10.10 IEC:61439 – 1	1 kV to 200 kV(rms)
	Busducts, Panels	Temperature rise test	IEC:61439 – 6 Cl. 7.1.1, 7.1.2 & 7.1.4 IS 8084 am1, am2 and am3	200 A to 6 kA, for 3-Phase 5 A to 2000 A for 1-Phase Up to 150°C
9.	Bushing Rating (upto 132 kV)	Lightning impulse voltage withstand test	Cl. 11.3, 11.4 & 11.5 IS:2099 am1, am2 Cl. No. 11.3, 11.4 & 11.7 IS 7421	15 kV to 1000 kV(peak)
	Bushing Rating (upto 66 kV)	HV power frequency test (dry & wet)	Cl. 11.3, 11.4 & 11.5 IS:2099 am1, am2 Cl. No.11.3, 11.4 & 11.7 IS 7421	1 kV to 200 kV(rms)
	Bushing Rating	Porosity test	Cl. 11.3, 11.4 & 11.5 IS:2099 am1, am2 Cl. No. 11.3, 11.4 & 11.7 IS 7421	1 kV to 200 kV(rms)
10.	Disc/Pin/Post/Solid core/Hollow Insulator, Insulator Strings, Lightning Arrester Housings and Insulating Materials (Upto 132 kV)	Lightning impulse voltage withstand test	Cl. 3.2, 3.3, 3.4 & 3.5 of IS:5621 am1 am2	15 kV to 1000kV(peak)
Lightning impulse voltage Flashover test		Cl. 9.2, 9.3, 9.4, 9.5, 9.7&9.12	15 kV to 1000kV(peak)	
Visible discharge test		Of IS 2544 with 4 amds 10.2, 10.3, 10.4, 10.13, 10.5 of IS:731 with 6 amds, IS:2071 (Part 1)	1 kV to 200 kV(rms)	
	Disc/Pin/Post/Solid core/Hollow Insulator, Insulator Strings, Lightning Arrester Housings and Insulating	HV power frequency withstand test (dry & wet)		1 kV to 200 kV(rms)
		HV power frequency flashover test (dry & wet)		1 kV to 200 kV(rms)

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	Materials (Upto 66 kV)			
11.	Disc/Pin/Post/Insulator, and Similar Insulating Materials. Rating (upto 33 kV inclusive)	Power frequency puncture withstand voltage test	Cl. 10.10 of IS 731 with 6 amds, Cl. 9.6of IS 2544 IS 1445 IEC 60383-1	1 kV to 200 kV(rms)
12.	Disc/Pin/Post/Solid core/Hollow Insulator, and Insulating Materials. Rating (Upto 33 kV)	Temperature cycle (On porcelain Insulators)	Cl. 10.6 of IS 731 with 6 amds, Cl. 9.6of IS 2544 IS 1445 IEC 60383-1	Up to 100°C
13.	Disc/Pin/Post/Solid core/Hollow Insulator, and Similar Insulating Materials.	Porosity	Cl. 10.11 IS 731 with 6 amds, Cl. 9.10 of IS 2544 IS 1445 IEC:60383-1	Qualitative
14.	Disc/Pin/Post/Solid core Insulator, Rating upto 36 kV	Electro Mechanical failing load	Cl. 10.7 IS 731 with 6 amds, IEC 60383-1	5 KN to 600 kN,200 kV (rms)
15.	Disc/Pin/Post/Solid/core Insulator, Rating upto 36 kV	Mechanical failing load test & 24 hours	Cl. 10.7 & 10.9 IS:731,2006 with 6 amds, Cl. 9.6 of IS:2544, 2006, IEC:60383-1,1993	5 KN to 600 kN
16	Disc/Pin/Post Insulator, Rating	Galvanizing test	Cl. 10.12 of IS:731,2006 with 6 amds, Cl. 9.11 of IS:2544, 2006, IEC:60383-1,1993	On examination with naked eye after final dip, there shall not be any red deposition on the surface.

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III.	TRANSFORMER & REACTOR			
1.	Distribution Transformer 1000kVA, 11/0.433kV	Measurement of Winding Resistance	IS 1180 (Part 1) Cl. No. 21.2	1.0 mΩ to 2.0 kΩ
		Measurement of Voltage Ratio and check of Vector Group	IS 1180 (Part 1) Cl. No. 21.2	0.5 to 100
		Measurement of short circuit impedance and load loss	IS 1180 (Part 1) Cl. No. 21.2	0.1 kW to 12kW 2 % to 15%
		Measurement of No load loss and current	IS 1180 (Part 1) Cl. No. 21.2	5 W to 2.5 kW 0.1 A to 100A
		Measurement of Insulation Resistance	IS 1180 (Part 1) Cl. No. 21.2	10 kΩ to 100 GΩ 500 V DC
		Separate Source voltage withstand test	IS 1180 (Part 1) Cl. No. 21.2	2.5 kV to 100 kV
		Pressure	IS 1180 (Part 1) Cl. No. 21.2 and 21.5	0.02 kg/cm ² to 2.1 kg/cm ² 1 mm to 10 mm
		Vacuum	IS 1180 (Part 1) Cl. No. 21.2 and 21.5	(-)-760 mm of Hg to (-)-30 mm of Hg 1 mm to 10mm
		Oil leakage	IS 1180 (Part 1) Cl. No. 21.2 and 21.5	0.02 kg/cm ² to 1.06 kg/cm ²
		Determination of Sound Level	IS 1180 (Part 1) Cl. No. 21.4	30 dB to 90 dB
	Temperature Rise	IS 1180 (Part 1) Cl. No. 21.3	1 °C to 100 °C Upto 100 A 0.1 kW to 12 kW	
IV.	MEASURING INSTRUMENTS - ELECTRICAL AND ELECTRONIC (STATIC) ENERGY METERS			
1.	AC Static Watthour Meter Class 1 and 2	Impulse voltage	IS 13779 Amd.1 to 5, Clause. 12.7.6.2 IEC 62052-11 Amd.1,	6 kV peak,

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	<p>AC Static Transformer operated Watthour and VAR- Hour Meters, Class 0.2 and 0.5;</p> <p>AC direct connected Static prepayment Meters for Active Energy Class 1 and 2</p>		<p>2016, Cl.No. 7.3.2 IEC 62053-21 Amd.1 IEC 62053-22 Amd.1 IEC 62053-23 Amd.1 IEC 62053-24 Amd.1 IS 14697 Amd.1 to 4, Cl.No. 12.7.6.2 CBIP R Publication : 325, Cl. No. 5.4.6.2 IS 15884 Cl. No. 5.4.6.2 IEC 62055 -31, Cl. No. 7.7 IS 16444 (Part 1) Amend. No. 1 Cl. No. 6.10.6 IS 16444 (Part 2) Cl. No. 6.10.6</p>	
	<p>AC.Static Direct Connected Watthour Smart Meter Class 1 and 2;</p> <p>AC.Static Transformer operated Watthour and VAR – hour Smart Meter</p> <p>Class 0.2S,0.5S and 1.0S;</p>	ac voltage test	<p>IS 13779 Amd.1 to 5, Clause. 12.7.6.3 IEC 62052-11 Amd.1, 2016, Cl.No. 7.3.23 IEC 62053-21 Amd.1 IEC 62053-22 Amd.1 IEC 62053-23 Amd.1 IEC 62053-24 Amd.1 IS 14697 Amd.1 to 4, Cl.No. 12.7.6.3 CBIP R Publication : 325, Cl. No. 5.4.6.3 IS 15884 Cl. No. 5.4.6.3 IEC 62055 -31, Cl. No. 7.7 IS 16444 (Part 1) Amend. No. 1 Cl. No. 6.10.6 IS 16444 (Part 2) Cl. No. 6.10.6</p>	1 kV to 5 kV
		Insulation Resistance	IS 13779 Amd.1 to 5, Cl. No. 12.7.6.4	Upto 2000 MΩ 500 V DC

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			IS 14697 Amd.1 to 4, Cl.No. 12.7.6.4 CBIP R Publication : 325, Cl. No. 5.4.6.4 IS 15884 Cl. No. 5.4.6.1 IS 16444 (Part 1) Amend. No. 1 Cl. No. 6.10.6 IS 16444 (Part 2) Cl. No. 6.10.6	
		Limits of Error	IS 13779 Amd.1 to 5, Clause. 11.1 IEC 62052-11 Amd.1 IEC 62053-21 Amd.1 Cl. No. 8.1 IEC 62053-22 Amd.1 Cl. No. 8.1 IEC 62053-23 Amd.1 Cl. No. 8.1 IEC 62053-24 Amd.1 Cl. No. 8.2 IS 14697 Amd.1 to 4, Cl.No. 11.1 CBIP R Publication : 325, Cl. No. 5.4.6.8 IS 15884 Cl. No. 4.6.1 IEC 62055 -31, Cl. No. 8.0 IS 16444 (Part 1) Amend. No. 1 Cl. No. 6.12 IS 16444 (Part 2) Cl. No. 6.12	1 mA to 120A DC 200 A Multi-turn 60 V to 320 V 45 Hz to 65 Hz
		Interpretation of test Results	IS 13779 Amd.1 to 5, Clause. 12.16 IEC 62052-11 Amd.1 Cl. No. 8.6 IEC 62053-21 Amd.1	Qualitative

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			Cl. No. 8.6 IEC 62053-22 Amd.1 Cl. No. 8.6 IEC 62053-23 Amd.1 Cl. No. 8.6 IEC 62053-24 Amd.1 Cl. No. 8.7 IS 14697 Amd.1 to 4, Cl. No. 11.1 CBIP R Publication : 325, Cl. No. 5.6.7 IS 15884 Cl. No. 5.6.6 IEC 62055 -31, Cl. No. 8.0 IS 16444 (Part 1) Amend. No. 1 Cl. No. 6.12 IS 16444 (Part 2) Cl. No. 6.12	
		Meter constant	IS 13779 Amd.1 to 5, Clause. 12.15 IEC 62052-11 Amd.1 IEC 62053-21 Amd.1 Cl. No. 8.4 IEC 62053-22 Amd.1 Cl. No. 8.4 IEC 62053-23 Amd.1 Cl. No. 8.4 IEC 62053-24 Amd.1 Cl. No. 8.5 IS 14697 Amd.1 to 4, Cl. No. 12.14 CBIP R Publication : 325, Cl. No. 5.4.6.6 IS 15884 Cl. No. 5.6.8 IEC 62055 -31, Cl. No. 8.0 IS 16444 (Part 1) Amend.	1 mA to 120 A DC 200 A Multiturn 60 V to 320 V 45 Hz to 65 Hz

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			No. 1 Cl. No. 6.12 IS 16444 (Part 2) Cl. No. 6.12	
		Starting condition, initial start up of the meter	IS 13779 Amd.1 to 5, Cl. No. 12.14 IEC 62052-11 Amd.1 IEC 62053-21 Amd.1 Cl. No. 8.3.1 IEC 62053-22 Amd.1 Cl. No. 8.3.3 IEC 62053-23 Amd.1 Cl. No. 8.3.1 IEC 62053-24 Amd.1 Cl. No. 8.4.2 IS 14697 Amd.1 to 4, Cl. No. 12.13 CBIP R Publication : 325, Cl. No. 5.4.6.5 IS 15884 Cl. No. 5.6.4 IEC 62055 -31, Cl. No. 8.0 IS 16444 (Part 1) Amend. No. 1 Cl. No. 6.12 IS 16444 (Part 2) Cl. No. 6.1	1 mA to120A DC 200 A Multiturn 60 V to320 V 45 Hz to 65 Hz
		No load condition	IS 13779 Amd.1 to 5, Clause. 12.13 IEC 62052-11 Amd.1 IEC 62053-21 Amd.1 Cl. No. 8.3.2 IEC 62053-22 Amd.1 Cl. No. 8.3.2 IEC 62053-23 Amd.1 Cl. No. 8.3.2 IEC 62053-24 Amd.1 Cl. No. 8.4.3	60 V to320 V 45 Hz to 65 Hz

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			IS 14697 Amd.1 to 4, Cl. No. 12.12 CBIP R Publication : 325, Cl. No. 5.6 IS 15884 Cl. No. 5.6.3 IEC 62055 -31, Cl. No. 8.0 IS 16444 (Part 1) Amend. No. 1 Cl. No. 6.12 IS 16444 (Part 2) Cl. No. 6.12	
		Test of repeatability of Error	IS 13779 Amd.1 to 5 Cl. No. 12.17 IS 14697 Amd.1 to 4 Clause 12.16 CBIP R. Publication : 325 Cl. No. 5.6.9 IS 15884 Cl. No. 5.6.9 IS 16444 Part 1 Amend. No. 1 Cl. No. 6.12 IS 16444 (Part 2) : 2017 Cl. No. 6.12	1 mA to120 A DC 200 A Multiturn 40 V to320 V 45 Hz to 65Hz
		Voltage variation	IS 13779 Amd.1 to 5, Cl. No. 12.11 IEC 62052-11 Amd.1 IEC 62053-21 Amd.1 Cl. No. 8.2 IEC 62053-22 Amd.1 Cl.No. 8.2 IEC 62053-23 Amd.1 Cl. No. 8.6 IEC 62053-24 Amd.1 Cl. No. 8.4.2 IS 14697 Amd.1 to 4, Cl. No. 12.10 CBIP R Publication : 325,	1 mA to 120A DC 200 A Multiturn 40 V to320 V 45 Hz to 65Hz

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			Cl. No. 4.6.3 IS 15884 Cl. No. 4.6.2 IEC 62055 -31, Cl. No. 8.0 IS 16444 (Part 1) Amend. No. 1 Cl. No. 6.12 IS 16444 (Part 2) Cl. No. 6.12	
		Frequency variation	IS 13779 Amd.1 to 5, Clause 12. 11 IEC 62052-11 Amd.1 IEC 62053-21 Amd.1 Clause. 8.2 IEC 62053-22 Amd.1 Cl. No. 8.2 IEC 62053-23 Amd.1 Cl. No. 8.2 IEC 62053-24 Amd.1 Cl. No. 8.6 IS 14697 Amd.1 to 4 , Clause 12. CBIP R. Publication : 325 Clause 4.6.3 IS 15884 Cl. No. 4.6.2 IEC 62055 -31 Clause.8.0 IS 16444 (Part 1) and Amend. No. 1 Clause. 6.12 IS 16444 (Part 2) Clause. 6.12	1 mA to 120 A DC 200 A Multiturn 60 V to320 V 45 Hz to 65Hz
		Reversed phase sequence	IS 13779 Amd.1 to 5, Clause 12.11 IEC 62052-11 Amd.1,2016 IEC 62053-21 Amd.1 Cl. No. 8.2 IEC 62053-22 Amd.1 Cl. No. 8.2	1 mA to 120A DC 200 A Multiturn 60 V to320 V 45 Hz to 65Hz

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			IEC 62053-23 Cl. No. 8.2 IEC 62053-24 Cl. No. 8.6 IS 14697 Amd.1 to 4 , Clause 12.10 CBIP R. Publication : 325 Clause 4.6.3 IS 15884 Clause 4.6.2 IEC 62055 -31,2005 Clause.8.0 IS 16444 (Part 1) Amd 1 Cl. No. 6.12 IS 16444 (Part 2) Cl. No. 6.12	
		Voltage unbalance	IS 13779 Amd.1 to 5, Clause 12.11 IEC 62052-11 Amd.1 IEC 62053-21 Amd.1 Clause. 8.2 IEC 62053-22, Amd.1 Clause 8.6 IEC 62053-23 Amd.1 Clause.8.6 IEC 62053-24 Clause.8.6 IS 14697 Amd.1 to 4 Clause 12.10 CBIP R. Publication : 325 Clause 4.6.3 IS 15884 Clause 4.6.2 IEC 62055 -31 Clause 8.0 IS 16444 (Part 1) and Amend. No. 1, January 2017 Clause. 6.12 IS 16444 (Part 2) Clause. 6.12	1 mA-120A Direct, 200 A Multiturn 60 V to320 V, 45 Hz to 65Hz

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		DC & even harmonics in current circuit	IS 13779 Amd.1 to 5, Clause 12.11 IEC 62052-11 Amd.1 IEC 62053-21 Amd.1 Clause. 8.2.3 IEC 62053-22 Amd.1 Clause 8.2 IEC 62053-23 Amd.1 Clause. 8.2 IEC 62053-24, 2014, Amd.1 Clause. 8.3.2 CBIP R.Publication : 325 Clause 4.6.3 IS 15884 Clause 4.6.2 IEC 62055 -31 Clause 4.6.3 IS 16444 (Part 1) and Amend. No. 1 Cl. No. 6.12 IS 16444 (Part 2) Clause. 6.12	1 mA to 120A Direct, 200 A Multiturn 60 V to 320 V 45 Hz to 65Hz
		Waveform 10% of 3 rd harmonic in the current	IS 13779 , Amd.1 to 5, Clause 12. 11 IS 14697 Amd.1 to 4 , Clause 12.10 CBIP R. Publication : 325 Clause 4.6.3 IS15884 Clause 4.6.2 IS 16444 (Part 1) and Amend. No. 1, Clause. 6.12 IS 16444 (Part 2) Clause. 6.12	1 mA to 120A Direct, 200 A Multiturn 60 V to 320 V 45 Hz to 65Hz
		Magnetic induction of external origin	IS 13779 Amd.1 to 5 Clause 12.11 IEC 62052-11 Amd.1 IEC 62053-21 Amd.1 Clause. 8.2 IEC 62053-22 Amd.1	1 mA to 120A Direct, 200 A Multiturn 60 V to 320 V 45 Hz to 65 Hz

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			Clause. 8.6 IEC 62053-23 Amd.1 Clause. 8.2 IEC 62053-24 Amd.1 Clause.8.6 IS 14697 Amd.1 to 4, Clause 12.10 IS15884 Clause 4.6.2 IEC 62055 -31 CBIP R. Publication : 325 Clause no.5.6.2.3 IS 16444 (Part 1) and Amend. No. 1 Clause. 6.12 IS 16444 (Part 2) Clause. 6.12	
		Stray d.c.magnetic induction of external origin	IS 13779 Amd.1to 5, Clause 12.11 IS 14697 Amd.1 to 4, Clause 12.10 CBIP R. Publication : 325 Clause 5.6.2.1 IS15884 Clause 4.6.2 IS 16444 (Part 1) and Amend. No. 1 Clause. 6.12 IS 16444 (Part 2) Clause. 6.12 CBIP R. Publication : 304 Clause 5.6.2.2	1 mA to 120A Direct 200 A Multiturn 60 V to320 V 45 Hz to 65Hz
		Stray a.c. magnetic induction of external origin 0.5mT	CBIP R.Publication : 304 Cl. No. 5.6.2.2	1 mA to 120A Direct 200 A Multiturn 60 V to320 V 45 Hz to 65Hz
		Abnormal a.c. magnetic Induction of external Origin	IS 13779 Amd.1to 5, Clause 12.11 IS 14697 Amd.1 to 4,	1 mA to 120A Direct 200 A Multiturn 60 V to320 V

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			Clause 12.10 CBIP R. Publication : 325 Clause. 5.6.2.4 IS15884 Clause. 5.6.2.4 IS 16444 (Part 1) and Amend. No. 1 IS 16444 (Part 2) Clause. 6.12 CBIP Manual 304	45 Hz to 65Hz
		Abnormal a.c.magnetic Induction of external Origin	CBIP R.Publication : 304 Cl. No. 5.6.2.2	1 mA to 120A Direct, 200 A Multiturn 60 V to320 V 45 Hz to 65Hz
		Continuous abnormal dc. magnetic Induction of external Origin (200/270 mTesla)	IS 13779 Amd.1 to 5 Clause. 12.11 IS 14697 Amd.1 to 4 Clause. 12.10 CBIP R. Publication : 325 Clause. 5.6.2.2 CBIP R. Publication : 304 Clause 5.6.2.2 IS15884 Clause. 4.6.2 IS 16444 (Part 1) and Amend. No. 1 Clause. 6.12 IS 16444 (Part 2)	1 mA to 120A Direct 200 A Multiturn 60 V to320 V 45 Hz to 65Hz
		Power Consumption	IS 13779 Amd.1 to 5, Clause 12.7.1 IEC 62052-11 Amd.1 Clause. 7.1 IEC 62053-21 Amd.1 Clause. 7.1 IEC 62053-22 Amd.1 Clause. 7.1 IEC 62053-23 Amd.1 Clause. 7.1	Upto 4.8 kW Upto 4.8 kVA

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			IEC 62053-24 Amd.1 Clause. 7.2 IS14697 Amd.1to4, Clause12.7.1 CBIP R. Publication : 325 Clause 5.4.1 IS15884 Clause 5.4.1 IEC 62055 -31 Clause. 7.3 IS 16444 (Part 1) and Amend. No. 1 Clause. 6.10.1 IS 16444 (Part 2) Clause. 6.10.1	
		Influence of supply Voltage	IS 13779 Amd.1 to 5, Clause. 12.7..2 IEC 62052-11 Amd.1 Clause. 7.1.2 IEC 62053-21 Amd.1 IEC 62053-22 Amd.1 IEC 62053-23 Amd.1 IEC 62053-24 Amd.1 IS 14697 Amd.1 to 4 Cl. No. 12.7.2 CBIP R. Publication : 325 Clause. 5.4.2 IS15884 Clause. 4.4.2&5.4.2 IEC 62055 -31 Clause. 7.2 IS 16444 (Part 1) and Amend. No. 1 Clause. 6.10.2 IS 16444 (Part 2) Clause. 6.10.2	1 mA to 120A Direct, 200 A Multiturn 60 V to320 V 45 Hz to 65Hz
		Influence of self heating	IS 13779 Amd.1 to 5 Clause. 12.7.4 IEC 62052-11 Amd.1 IEC 62053-21 Amd.1	1 mA to 120A Direct, 200 A Multiturn 60 V to320 V 45 Hz to 65Hz

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			Clause. 7.3 IEC 62053-22 Amd.1 Clause. 7.3 IEC 62053-23 Amd.1 Clause. 7.3 IEC 62053-24 Amd.1 Clause. 7.4 IS 14697 Amd.1 to 4, Clause. 12.7..4 CBIP R. Publication : 325 Clause. 5.4.4 IS15884 Clause. 5.4.4 IEC 62055 -31 Clause. 7.6 IS 16444 (Part 1) and Amend. No. 1 Clause. 6.10.4 IS 16444 (Part 2) Clause. 6.10.4	
		Influence of heating	IS 13779 Amd.1 to 5 Clause. 12.7.5 IEC 62052-11 Amd.1,2016, Clause. 7.2 IEC 62053-21 Amd.1 IEC 62053-22 Amd.1 IEC 62053-23 Amd.1 IEC 62053-24 Amd.1 IS 14697 Amd.1 to 4, Clause. 12.7.5 CBIP R. Publication : 325 Clause. 5.4.5 IS15884 Cl. No. 5.4.5 IEC 62055 -31 Cl. No. 7.5 IS 16444 (Part 1) and Amend. No. 1 Clause. 6.10.5	1 mA to 120A Direct 200 A Multiturn 60 V to320 V 45 Hz to 65Hz

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			IS 16444 (Part 2) Clause. 6.10.5	
		Immunity to earth/phase fault / Abnormal voltage condition	IS 13779 Amd.1 to 5 Clause. 12.8 IEC 62052-11 Amd.1 Clause. 7.4 IEC 62053-21 Amd.1 IEC 62053-22 Amd.1 IEC 62053-23 Amd.1 IEC 62053-24 Amd.1 IS 14697 Amd.1 to 4, Clause. 12.17 CBIP R.Publication : 325,2015 IS15884,2010 , IEC 62055 -31,2005, IS 16444 (Part 1): 2015 and Amend. No. 1, January 2017 Clause. 6.10.7 IS 16444 (Part 2) : 2017 Clause. 6.10.7	1 mA to 120A Direct 200 A Multiturn 60 V to 320 V 45 Hz to 65Hz
		Dry heat	IS 13779 Amd.1 to 5, Clause. 12.6.1 IEC 62052-11 Amd.1 Clause. 6.3.1 IEC 62053-21 Amd.1 IEC 62053-22 Amd.1 IEC 62053-23 Amd.1 IEC 62053-24 Amd.1,2016, IS 14697 Amd.1 to 4, Clause. 12.6.1 CBIP R. Publication : 325 Clause. 5.3.1 IS15884 Clause. 5.3.1 IEC 62055 -31 Cl. No.6.0	80°C

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			IS 16444 (Part 1) and Amend. No. 1 Clause. 6.9 IS 16444 (Part 2) Clause. 6.9	
		Cold test	IS 13779 Amd.1 to 5, Clause. 12.6.2 IEC 62052-11 Amd.1 Clause. 6.3.1 IEC 62053-21 Amd.1 IEC 62053-22 Amd.1 IEC 62053-23 Amd.1 IEC 62053-24 Amd.1 IS 14697 Amd.1 to 4, Clause. 12.6.2 CBIP R. Publication : 325 Clause. 5.3.2 IS15884 Clause. 5.3.1 IEC 62055 -31Cl. No.6.0 IS 16444 (Part 1) and Amend. No. 1 Clause. 6.9 IS 16444 (Part 2) Clause. 6.9	-40°C
		Damp heat cyclic	IS 13779 Amd.1 to 5, Clause. 12.6.3 IEC 62052-11 Amd.1 Clause. 6.3.1 IEC 62053-21 Amd.1 IEC 62053-22 Amd.1 IEC 62053-23 Amd.1 IEC 62053-24 Amd.1 IS 14697 Amd.1 to 4, Clause. 12.6.3 CBIP R. Publication : 325 Clause. 5.3.3 IS15884 Clause. 5.3.1	RH 30% to 98% 40°C to 55°C

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			IEC 62055 -31 Cl. No.6.0 IS 16444 (Part 1) and Amend. No. 1, January 2017, Clause. 6.9 IS 16444 (Part 2) Clause. 6.9	
		Spring Hammer Test/ mechanical test of meter case	IS 13779 Amd.1 to 5, Clause. 12.3.3 IEC 62052-11 Amd.1 Clause. 5.2.2.1 IEC 62053-21 Amd.1 IEC 62053-22 Amd.1 IEC 62053-23 Amd.1 IEC 62053-24 Amd.1 IS 14697 Amd.1 to 4, Clause. 12.3.3 CBIP R. Publication : 325 Clause. 5.2.1 IS15884 Clause. 5.2.1 IEC 62055 -31 IS 16444 (Part 1) and Amend. No. 1 Clause. 6.5 IS 16444 (Part 2) Clause. 6.5	Qualitative
		General and constructional requirements (except HDT) General, Meter case, Window, Terminals, Terminal Block and Protective earth Terminal, Terminal Cover, Clearances and Creepage distances,	IS 13779 Amd.1to 5 Clause. 6.0 IEC 62052-11Amd.1 IEC 62053-21 Amd.1 IEC 62053-22 Amd.1 IEC 62053-23 Amd.1 Clause. 6.0 IEC 62053-24 Amd.1 IS 14697 Amd.1 to 4, CBIP R. Publication : 325 Clause. 4.2.2	Upto 200mm

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Insulating encased meter, Display of measured values, Output Device, Keypad Interference	IS 15884 Clause. 4.1, 4.2.12.3 IEC 62055 -31 IS 16444 (Part 1) and Amend. No. 1 Clause. 6.2.6.3,6.6,6.7 IS 16444 (Part 2) : 2017 Clause. 6.2.6.3,6.6,6.7	
		Marking of meters 7.1 – Name Plate 7.2 – Connection Diagrams and terminal Marking	IS 13779 Amd.1to 5, Clause. 7.0 IEC 62052-11 Amd.1 IEC 62053-21 Amd.1 IEC 62053-22 Amd.1 IEC 62053-23 Amd.1 IEC 62053-24 Amd.1 IS 14697 Amd.1 to4, Clause. 7.0 CBIP R. Publication : 325 Clause. 4.2.2.11 IS 15884 Clause. 4.2. IEC 62055 -31 IS 16444 (Part 1) and Amend. No. 1 Cl. No. 6.8 of IS 16444 (Part 2) Clause. 6.8	Qualitative
		Data Exchange Protocol	IS 15959 (Part 1) with Amendment No. 1 Amendment No. 2 Amendment No. 3 Amendment No. 4 IS 15959 (Part 2) Amendment No. 1 IS 15959 (Part 3)	Qualitative (Conformance Test Tool (CTT 3.0) DLMS Explorer Tool / Functional Evaluation Tool (FET) Meter Explorer Tool / Functional Evaluation Tool (FET) extended edition)

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Compliance test: 1.0 Conformance to DLMS/COSEM (IEC 62056) 2.0 Parameter verification: 2.1 SNRM/UA 2.2 Object list download 2.3 Association properties 2.4 Simultaneous operation 2.5 Security: 2.5.1 Lowest Level Security Secret 2.5.2 Low Level Security (LLS) Secret 2.5.3 High Level Security (HLS) Secret 2.6 ToU setting 2.7 Billing Period 2.8 Billing Period Counter 2.9 Parameter list: 2.9.1 (a) Instantaneous Parameters 2.9.1 (b) Snap Shot of Instantaneous Parameters 2.9.1 (c) Scaler Profile 2.9.2 Block load profile parameters 2.9.3 Selective access by Range for Block load profile 2.9.4 Daily load profile parameters	IS 15959 (Part 1) Amendment No. 1 Amendment No. 2 Amendment No. 3 Amendment No.4	Qualitative (Conformance Test Tool (CTT 3.0) DLMS Explorer Tool Meter Explorer Tool Functional Evaluation Tool (FET))

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		2.9.5 Selective access by Range for Daily load profile 2.9.6 Billing profile parameters 2.9.7 Selective access by Entry for Billing profile 2.10 General Purpose parameters : 2.10.1 Name Plate Details 2.10.2 Programmable Parameters. 2.11 Event code and Event logging : 2.11.1 Indian Event Reference Table – Voltage Related 2.11.2 Indian Event Reference Table – Current Related 2.11.3 Indian Event Reference Table – Power Related 2.11.4 Indian Event Reference Table – Transaction Related 2.11.5 Indian Event Reference Table – Other 2.11.6 Indian Event Reference Table – Non Roll Over 2.11.7 Indian Event Reference Table – Control		

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		2.12 Selective access by Entry for Event Log Profile		
V. TRANSMISISON LINE EQUIPMENT AND ACCESSORIES				
1.	Current Transformers Rating (upto 132 kV)	Lightning impulse voltage withstand test	Cl. 9.3 9.7, 9.8 & 9.9 of IS:2705 (Part -1) IS:2705 (Part -2 to 4) Cl. 7.2.2, 7.2.3 & 7.2.4 IEC: 61869-1 IEC: 61869-2	15 kV to 1000 kV(peak)
	Current Transformers Rating (upto 66kV)	High voltage power frequency test (dry & wet)	Cl. 9.3 9.7, 9.8 & 9.9 of IS:2705 (Part -1) IS:2705 (Part -2 to 4) Cl. 7.2.2, 7.2.3 & 7.2.4 IEC: 61869-1 IEC: 61869-2	1kV to 200kV(rms)
	Current Transformers	Temperature rise test	Cl. 9.3 9.7, 9.8 & 9.9 of IS:2705 (Part -1) IS:2705 (Part -2 to 4) Cl. 7.2.2, 7.2.3 & 7.2.4 IEC: 61869-1 IEC: 61869-2	200 A to 6 kA, for 3 to Phase 5 A to 2000 A for 1 to Phase Up to 150°C
	Voltage Transformers Rating (upto 132 kV)	Lightning impulse voltage withstand test	Cl. 9.2.1 & 9.2.2 IS:3156 (Part -1), 1992 with amd No.1, 1999, IS:3156 (Part -2 & 3), 1992 Cl. 7.2.2, 7.2.3 & 7.2.4 IEC: 61869-3-2011	15kV to 1000kV(peak)