Test Report No.:	*Page X of XX* *Date:*
Manufacturer: **Applicant's Name** Applicant's address	
Test item:	
Identification:	*Serial No.:*
Receipt No.:	*Date of receipt:*
Testing laboratory and its address:	
Test specification:	IS 302-2-26: 2014
Test Result:	*The test item meets/ do not meet the relevant requirements of test specification*
Other Aspects:	
This test report relates to the test sample submitted and list of documents attached.	

Tested by:	**Approved by / Authorized Signatory:**	**Issued by:**
Analyst	Manager Technical	Manager Technical

TEST REPORT **IS 302-2-26: 2014** **Safety of household and similar electrical appliances** **Particular requirements** **Section 26** **"Clocks"**
Report Number. .....: **Date of issue:** **Total number of pages.....:**
Manufacturer's name .....: Address .....:
Test specification: **Standard .....:** IS 302-2-26: 2014 **Test procedure.....:** Compulsory Registration Scheme **Non-standard test method.....:** N/A
Test Report Form No.....: TRF NO. BIS_Clock_IS 302/P2S26_V1.0 **Test Report Form(s) Originator.....:** Bureau of Indian Standards **Test Report Form** 01.07.2019
Test item description: Clocks **Trade Mark .....:** **Model/Type reference .....:** **Ratings .....:** **Other Documents submitted.....:**

Tested by:	**Approved by / Authorized Signatory:**	**Issued by:**
Analyst	Manager Technical	Manager Technical

Description	Measurement / testing	Total No. of Tests	Total No. of Applicable Tests / Req.	No. of Tests / Req. Passed	Page No.
General	Classification (Cl 6)				
Marking requirements	Marking and instructions (Cl 7)				
Electrical safety	Protection against access to live part test (Cl 8)				
Electrical safety	Starting of motor-operated appliances test (Cl 9)				
Electrical safety	Power Input and current test (Cl 10)				
Heating Requirements	Heating test (Cl 11)				
Electrical safety	Leakage current and electric strength test (Cl 13)				
Interference suppression requirements	Impulse voltage test (Cl 14)				
Electrical safety	Humidity treatment test (Cl 15)				
Electrical safety	Leakage current and electric strength test (Cl 16)				
Electrical safety	Overload protection of transformers test (Cl 17)				
Endurance requirements	Endurance test (Cl 18)				
Electrical safety	Fault conditions (Cl 19)				
Stability and mechanical hazards	10° Tilt stability test(Cl 20)				
Mechanical properties	Impact and scratch test (Cl 21)				
Constructional requirements	Construction verification related tests (Cl 22)				
Electrical safety	HV test for basic insulation (int. wires) (Cl 23)				

Components	Components (Cl 24)				
Wiring	Supply connections and External Flexible Cables and cords testing (Cl 25)				
Wiring	Terminal For External Conductors pull test (Cl 26)				
Electrical safety	Earth bond test (Cl 27)				
Mechanical stress	Screws and connections test (Cl 28)				
Mechanical properties	Clearances and Creepage distances (Cl 29)				
Physical properties	Resistance to fire tests(Cl 30)				
Resistance to rusting	Resistance to rusting (Cl 31)				
Radiation toxicity hazards	Radiation tests (Cl 32)				
Annex A	Routine Tests				
Annex B	Appliances Powered by Rechargeable Batteries				
Annex C	Ageing test on motors				
Annex D	Thermal motor protectors				
Annex E	Needle-flame test				
Annex F	Capacitors				
Annex G	Safety isolating transformers				
Annex H	Switches				
Annex I	Motors having basic insulation that is inadequate for the rated voltage of the appliance				
Annex J	Coated printed circuit boards				
Annex K	Overvoltage categories				
Annex L	Guidance for the				

	measurement of clearances and creepage distances				
Annex M	Pollution degree				
Annex N	Proof tracking test				
Annex O	Selection and sequence of the tests of clause 30				
Annex P	Guidance for the application of this standard to appliances used in warm damp equable climates				
Annex Q	Sequence of tests for the evaluation of electronic circuits				
Annex R	Software evaluation				
Annex S	BALL PRESSURE TEST				

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

Approving Authority)

Copy of marking label:

Cl.24.1	TABLE: list of components and materials	

Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity[1)]
Supplementary information:					

Attachment No.	Attachment Description	No. of pages in Attachment

Tested by:	Approved by /Authorized Signatory:
Analyst	Manager Technical

Test item particulars……..:
Classification of installation and use..... **Supply Connection .....**
Laboratory conditions……:
Ambient Temperature / Humidity..... (15-35)°C,(45-75)%RH
Testing: Date of receipt of test item .....: **Date (s) of performance of tests .....:**
General remarks: The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory
General product information:
Differences between the models:

Tested by:	Approved by / Issued By
Analyst	Manager Technical

Clause No.	Test / Requirement name	Test result/ observation	Verdict
6	**Classification ***		
6.1	Appliance shall be one of the following classes with respect to the protection against electric shock: Class 0, 0I, I, II, III *		
6.2	Appliances shall have the appropriate degree of protection against harmful ingress of water *		

*Total number of Requirements to be observed / inspected = 03
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 00
Total No. of Applicable Tests =
No. of tests for which the sample passed=

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
7	**Marking and instructions**		
7.1	Appliance shall be marked with the *		
	a) Rated voltage or voltage range in volts;*		
	b) Symbol for nature of supply, unless the rated frequency is marked; *		
	c) rated power input in watts or rated current in amperes; *		
	d) name, trade mark or identification mark of the manufacturer or responsible vendor; *		
	e) model or type reference; *		
	f) symbol for class II appliances only; *		
	g) IP number according to degree of protection against ingress of water, other than IPX0; *		
	h) Country of manufacturer; and *		
	J) Compliance is checked by inspection. *		
7.2	Warning for stationary appliances for multiple supply *		
	Warning placed in vicinity of terminal cover*		
7.3	Appliances having a range of rated values and which can be operated without adjustment throughout the range shall be marked with the lower and upper limits of the range separated by a hyphen.*		
	Appliances having different rated values and which have to be adjusted for use at a particular value by the user or installer shall be marked with the different values separated by anoblique stroke.*		

7.4	If the appliance can be adjusted for different rated voltages, the voltage to which the appliance is adjusted shall be clearly discernible.*		
7.5	For appliances marked with more than one rated voltage or with one or more rated voltage ranges, the rated power input or rated current for each of these voltages or ranges shall be marked. However, if the difference between the limits of a rated voltage range does not exceed 10 % of the mean value of the range, the marking for rated power input or rated current may be related to the mean value of the range.*		
	The upper and lower limits of the rated power input or rated current shall be marked on the appliance so that the relation between input and voltage is clear.*		
7.6	When symbols are used, they shall be as per symbols provided in clause 7.6*		
	The symbol for nature of supply shall be placed next to the marking for rated voltage.*		
	The symbol for class II appliances shall be placed so that it will be obvious that it is a part of the technical information and is unlikely to be confused with any other marking. *		
	Units of physical quantities and their symbols shall be those of the international standardizedsystem. *		
7.7	Appliances to be connected to more than two supply conductors and appliances for multiple supply shall have a connection diagram fixed to them, unless the correct mode of connection is obvious. *		
7.8	Except for type Z attachment, terminals used for connection to the supply mains shallbe indicated as follows: *		
	a) terminals intended exclusively for the neutral conductor shall be indicated by the letter N; *		

	b) protective earthing terminals shall be indicated by symbol specified in 7.6*		
	These indications shall not be placed on screws, removable washers or other parts which canbe removed when conductors are being connected. *		
7.9	Unless it is obviously unnecessary, switches which may give rise to a hazard when operated shall be marked or placed so as to indicate clearly which part of the appliance they control. Indications used for this purpose shall, wherever practicable, be comprehensible without knowledge of languages or national standards. *		
7.10	The different positions of switches on stationary appliances and the different positions of controls on all appliances shall be indicated by figures, letters or other visual means. *		
	If figures are used for indicating the different positions, the off position shall be indicated by the figure 0 and the position for a higher value, such as output, input, speed or cooling effect,Shall be indicated by a higher figure.*		
	The figure 0 shall not be used for any other indication unless it is positioned and associatedwith other numbers so that it does not give rise to confusion with the indication of the off position. *		
7.11	Controls intended to be adjusted during installation or in normal use shall be provided with an indication for the direction of adjustment. *		
7.12	Instructions for use shall be provided with the appliance so that the appliance can beused safely. *		
	If it is necessary to takeprecautions during usermaintenance, appropriate details shall be given *		

7.12.1	If it is necessary to take precautions during installation of the appliance, appropriatedetails shall be given. *		
7.12.2	If a stationary appliance is not fitted with a supply cord and a plug, or with other means for disconnection from the supply mains having a contact separation in all poles thatprovide full disconnection under overvoltage category IIIconditions, the instructions shallstate that means fordisconnection must be incorporated in the fixed wiring in accordance withthe wiring rules. *		
7.12.3	If the insulation of the fixed wiring supplying an appliance for permanent connectionto the supply mains can come into contact with parts having temperature rise exceeding 50 Kduring the test of clause 11, the instructions shall state that the fixed wiring insulation must beprotected, for example, by insulating sleeving having an appropriate temperature rating. *		
7.12.4	The instructions for built-in appliances shall include information with regard to thefollowing: *		
	a) dimensions of the space to be provided for the appliance; *		
	b) dimensions and position of the means for supporting and fixing the appliance within thisspace; *		
	c) minimum distances between the various parts of the appliance and the surroundingstructure; *		
	d) minimum dimensions of ventilating openings and their correct arrangement; *		
	e) connection of the appliance to the supply mains and the interconnection of any separate components; *		
	f)necessity to have the plug accessible after installation, unless the appliance incorporatesa switch complying with 24.3. *		

	The disconnection may be achieved by having by having the plug accessible or by incorporating a switch in affixed wiring in according to the wiring rules *****		
7.12.5	For appliances with type X attachment having a specially prepared cord, the instructions shall contain the substance of the following. *		
	If the supply cord is damaged, it must be replaced by a special cord or assembly available from the manufacturer or its service agent. *		
	For appliances with type Y attachment, the instructions shall contain the substance of the following. *		
	If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard. *		
	For appliances with type Z attachment, the instructions shall contain the substance of the following. *		
	The supply cord cannot be replaced. If the cord is damaged the appliance should be scrapped. *		
7.12.6	The instructions for heating appliances incorporating with a non-self-resetting thermal cut-out that is reset by disconnection of supply mains shall contain substance of following *		
	CAUTION: in order to avoid inadvertent resetting of thermal cutout this appliance must not be supplied through an external switching device ,such as timer , or connected to circuit that is regularly switched on and off by the utility *		
7.12.7	Instructions for fixed appliances stating how the appliance is to be fixed to its support *		
7.12.8	Instructions for appliances connected to the water mains shall state *		
	a) maximum inlet water pressure in pascals; and*		

	b) the minimum inlet water pressure ,in pascals ,if this is necessary for correct operation of the appliance *****		
	Instructions for appliance connected to a water by detachable hose sets supplied with the appliance are to be used and that old hose sets applied with the appliance are to be used and that old hose sets should not be reused *****		
7.13	Instructions and other text required by this standard shall be written in an official language of the country in which the appliance is to be sold. *		
7.14	The markings required by the standard shall be clearly legible and durable.		
7.15	The markings specified in 7.1 to 7.5 shall be on a main part of the appliance. *		
	Markings on the appliance shall be clearly discernible from the outside of the appliance but ifnecessary after removal of a cover. For portable appliances it shall be possible to remove or open this cover without the aid of a tool. *		
	For stationary appliances at least the name or trade mark or identification mark of themanufacturer or responsible vendor and the model or type reference shall be visible when the appliance is installed as in normal use. These markings may be beneath a detachable cover.Other markings may be beneath a cover only if they are near to the terminals. For fixed appliances, this requirement applies after the appliance has been installed according to the instructions provided with the appliance. *		
	Indications for switches and controls shall be placed on or near these components. They shall not be placed on parts which can be positioned or repositioned in such a way that the marking is misleading. *		

7.16	If compliance with this standard depends upon the operation of a replaceable thermal link or fuse link, the reference number or other means for identifying the link shall be marked at such a place that it is clearly visible when the appliance has been dismantled to the extent necessary for replacing the link. *		
	The requirement does not apply to link which can only be replaced together with a part of the appliance *		
7.101	BIS Certification Marking The clock may also be marked with standard Mark*		

*Total number of Requirements to be observed / inspected = 30
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 03
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
8	**Protection against access to live parts**		
8.1	Appliances shall be constructed and enclosed so that there is adequate protection against accidental contact with live parts.		
8.1.1	The requirement of 8.1 applies for all positions of the appliance when it is operated as in normal use, and after the removal of detachable parts.		
	Lamps located behind a detachable cover are not removed, provided that the appliance can be isolated from the supply mains by means of a plug or an all-pole switch. However, during insertion or removal of lamps which are located behind a detachable cover, protection against contact with live parts of the lamp cap shall be ensured.		
	Test probe B of IS 1401 is applied without appreciable force, the appliance being in everypossible position except that appliances normally used on the floor and having a massexceeding 40 kg are not tilted. Through openings, the test probe is applied to any depth thatthe probe will permit and is rotated or angled before, during and after insertion to anyposition. If the opening does not allow the entry of the probe, the force on the probe in thestraight position is increased to 20 N. If the probe then enters the opening, the test is repeated with the probe in the angled position.		
	It shall not be possible to touch live parts or live parts protected only by lacquer, enamel,ordinary paper, cotton, oxide film, beads, or sealing compound except self-hardening resins,with the probe.		

8.1.2	Test probe 13 of IS1401 is applied without appreciable force through openings in class 0 appliances, class II appliances and class II constructions, except for those giving access to lamp caps and live parts in socket-outlets.		
	The test probe is also applied through openings in earthed metal enclosures having a nonconductive coating such as enamel or lacquer.		
8.1.3	Instead of test probe B and test probe 13, for appliances other than those of class II, test probe 41 of IS 1401 is applied without appreciable force to live parts of visibly glowing heating elements, all poles of which can be disconnected by a single switching action. It is also applied to parts supporting such elements, provided that it is obvious from the outside of the appliance, without removing covers and similar parts, that these supporting parts are in contact with the element		
8.1.4	An accessible part is not considered to be live if		
	a) the part is supplied at safety extra-low voltage, provided that		
	1) for a.c., the peak value of the voltage does not exceed 42.4 V,		
	2) for d.c., the voltage does not exceed 42.4 V,Or		
	b). the part is separated from live parts by protective impedance		
	If protective impedance is used, the current between the part and the supply source shall not exceed 2 mA for d.c., its peak value shall not exceed 0,7 mA for a.c. and		
	a)for voltages having a peak value over 42,4 V up to and including 450 V, the capacitance shall not exceed 0,1 µ F,		

	b)for voltages having a peak value over 450 V up to and including 15 kV, the discharge shall not exceed 45 µC.		
8.1.5	Live parts of built-in appliances, fixed appliances and appliances delivered in separate units, shall be protected at least by basic insulation before installation or assembly.		
8.2	Class II appliances and class II constructions shall be constructed and enclosed so that there is adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only.		
	It shall only be possible to touch parts which are separated from live parts by double insulation or reinforced insulation.		
	Use of Test probe 18 of IS 1401 applied to parts that are accessible when the clock is operated in normal use		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 13
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
9	**Starting of motor-operated appliances***		
	Requirements and tests are specified in part 2 when necessary *		

*Total number of Requirements to be observed / inspected = 01
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 00
Total No. of Applicable Tests =
No. of tests for which the sample passed =

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Clause No.	Test / Requirement name	Test result/ observation	Verdict
10	**Power input and current**		
10.1	If an appliance is marked with rated power input, the power input at normal operatingtemperature shall not deviate from the rated power input by more than the deviation shownin table 1.		
	The deviation for motor- operated appliances applies for combined appliances if the power input of the motors is more than 50 % of the rated power input.		
10.2	If an appliance is marked with rated current, the current at normal operating temperature shall not deviate from the rated current by more than the deviation shown in table 2.		
	The deviation for motor-operated appliances applies for combined appliances if the current of the motors is more than 50 % of the rated current.		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 03
Total No. of Applicable Tests =
No. of tests for which the sample passed =

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
11	**Heating**		
11.1	Appliances and their surroundings shall not attain excessive temperatures in normal use.		
11.2	Hand-held appliances are held in their normal position of use.		
	Built-in appliances are installed in accordance with the instructions.		
	Other heating appliances and other combined appliances are placed in a test corner as follows:		
	a) appliances normally placed on a floor or table in use, are placed on the floor as near tothe walls as possible;		
	b) appliances normally fixed to a wall are fixed to one of the walls, as near to the other walland floor or ceiling as is likely to occur, taking into account the instructions;		
	c) Appliances normally fixed to a ceiling are fixed to the ceiling as near to the walls as is likely to occur, taking into account in the instructions.		
	Other motor-operated appliances are positioned as follows:		
	a) appliances normally placed on a floor or table in use are placed on a horizontal support;		
	b) appliances normally fixed to a wall are fixed to a vertical support;		
	c) Appliances normally fixed to a ceiling are fixed underneath a horizontal support.		
11.3	Temperature rises, other than those of windings, are determined by means of fine-wirethermocouples positioned so that they have minimum effect on the temperature of the partunder test.		

11.4	Heating appliances are operated under normal operation and at 1.15 times rated power input.		
11.5	Motor-operated appliances are operated under normal operation and supplied with the most unfavorable voltage between 0.94 times and 1.06 times the rated voltage.		
11.6	Combined appliances are operated under normal operation and supplied with the most unfavorable voltage between 0.94 times and 1.06 times the rated voltage.		
11.7	Appliances are operated for Three cycles, each cycle consisting of a heating period of 10 min followed by a rest period of 1 min. During the rest periods, the door is open and the load is replaced		
11.8	During the test, the temperature rises are monitored continuously and shall not exceed the values shown in table 3. However, if the temperature rise of the motor winding exceeds the value specified in table 3 or if there is doubt with regard to the temperature classificationof the insulation of the motor, the tests of annex C are carried out.		
	Protective devices shall not operate and sealing compound shall not flow out.		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =
Total number of tests to be conducted =13
Total No. of Applicable Tests =
No. of testsfor which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
13	**Leakage current and electric strength at operating temperature**		
13.1	At operating temperature, the leakage current of the appliance shall not be excessiveand its electric strength shall beadequate.		
	The appliance is operated under normal operation for the duration specified in 11.7.		
	Heating appliances are operated at 1.15 times the rated power input.		
	Motor-operated appliances and combined appliances are supplied at 1.06 times rated voltage.		
	Three-phase appliances which, according to the instructions for installation, are also suitable for single- phase supply are tested as single-phase appliances with the three circuits connected in parallel.		
	Protective impedance and radio interference filters are disconnected before carrying out the tests.		
13.2	The leakage current is measured by means of the circuit described in Fig. \ between any pole of the supply and accessible metal parts connected to metal foil having an area not exceeding 20 cm *x* 10 cm which is in contact with accessible surfaces of insulating materials.		
	For single-phase appliances, the measuring circuit is shown in the following figures:		
	a) if of Class II, see Fig, 2; and		
	b)if other than Class II, *see* Fig. 3		
	For three-phase appliances, the measuring circuit is shown in the following figures:		

	a) if of Class II, *see* Fig. 4; and		
	b) if other than Class II, *see* Fig. 5		
	For three-phase appliances, the leakage current is measured with the switches *a, b* and *c* in the closed position. The measurements are then repeated with each of the switches *a, b* and c open in turn, the other two switches remaining closed. For appliances intended to be connected in star connection only, the neutral is not connected.		
	After the appliance has been operated for a duration as specified in 11.7, the leakage current shall not exceed the following values:		
	a). for Class II appliances: 0.21 mA		
	b). for or Class III appliances : 0.5 mA		
	c). for portable appliances Class I : 0.21 mA		
	d). for stationary Class I motor-operated appliances: 3.5 mA		
	e). for stationary Class I : 0.21 mA heating appliances or 0.21mA per kW rated power input of the appliance with a maximum of 1.5 mA, whichever is higher		
	For combined appliances, the total leakage current may be within the limits specified for heating appliances or motor-operated appliances, whichever is the greater, but the two limits are not added		
	If the appliance incorporates capacitors and is provided with a single-pole switch, the measurements are repeated with the switch in the off position		
	If the appliance incorporates a thermal control which operates during the test of II, the leakage current is measured immediately before the control opens the circuit		

13.3	The appliance is disconnected from the supply and the insulation is immediately subjected to voltage having a frequency of 50 Hz for 1 min, in accordance with IS 2071 (Part 1)		
	The high-voltage source used for the test is to be capable of supplying a short circuit current $/_s$ between the output terminals after the output voltage has been adjusted to the appropriate test voltage. The overload release of the circuit is not to be operated by any current below the tripping current 7_r. The values of $/_s$ and $/_t$ are given in Table 5 for various high-voltage sources		
	The test voltage is applied between live parts and accessible pans, non-metallic parts being covered with metal foil. For Class II constructions having intermediate metal between live parts and accessible parts, the voltage is applied across the basic insulation and the supplementary insulation		

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Total number of tests to be conducted = 04
Total No. of Applicable Tests =
No. of tests for which the sample passed =

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
14	**Transient overvoltages**		
	Appliances shall withstand the transient over voltages to which they may be subjected		
	The impulse test voltage has a no-load wave shape corresponding to the 1.2/50 us standard impulse specified in IS 2071 (Part 1). It is supplied from a generator having a virtual impedance of 12 ohm. The impulse test voltage is applied three times for each polarity with intervals of at least 1 s		
	The impulse test voltage is specified in Table 6 for rated impulse voltages given in Table 15		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 02
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
15	**Moisture resistance**		
15.1	The enclosure of the appliance shall provide the degree of protection against moisture in accordance with the classification of the appliance		
	Appliances other than those classified IPX0 are subjected to the tests according to following clauses of IS 12063 as mentioned below		
	a) IPX1 appliances as described in 14.2.1;		
	b)IPX2 appliances as described in 14.2.2;		
	c)IPX3 appliances as described in 14.2.3a;		
	d)IPX4 appliances as described in 14.2.4a;		
	e)IPX5 appliances as described in 14.2.5;		
	f)IPX6 appliances as described in 14.2.6;		
	g)IPX7 appliances as described in 14.2.7. For this test the appliance is immersedin water containing approximately 1 % NaCl.		
	Water valves containing live parts and that are incorporated in external hoses for connection of in appliance to the water mains are subjected to the test specified for IPX7 appliances		
15.1.2	Hand-held appliances are turnedcontinuously through the mostunfavorable positions during thetest. Built-in appliances areinstalled in accordance with theinstructions		
	Appliances normally used on thefloor or table are placed on a horizontal unperforated supporthaving a diameter of twice the oscillating tube radius minus 15 cm.		

	Appliances normally fixed to a wall and appliances with pins for insertion into socket-outlets are mounted as in normal use in the centre of a wooden board having dimensions which arc 15 ±5 cm in excess of those of the orthogonal projection of the appliance on the board. The wooden board is placed at the centre of the oscillating tube		
	For IPX3 appliances, the base ofwall-mounted appliances is placed at the same level as the pivot axis of the oscillating tube		
	For IPX4 appliances, the horizontal centre line of the appliance is aligned with the pivot axis of the oscillating tube. However, for appliances normally used on the floor or table, the movement is limited to two times 90" from the vertical for a period of 5 min, the support being placed at the level of the pivot axis of the oscillating lube		
	If the instructions for wall-mounted appliances state mat the appliance is to be placed close to the floor level and specifies a distance, a board is placed under the appliance at that distance. The dimensions of the board are 15 cm more than the horizontal projection of the appliance		
	Appliances normally fixed to a ceiling are mounted underneath a horizontal unperforated support that is constructed to prevent water spraying onto its top surface. The pivot axis of the oscillating tube is located at the same level as the underside of The support and aligned centrally with the appliance. The spray is directed upwards		
	For IPX4 appliances, the movement of the tube is limited to two times 90" from the vertical for a period of 5 min.		

	Appliances with type X attachment, except those: having a specially prepared cord, are fitted with the lightest permissible type of flexible cord of the smallest cross-sectional area specified in Table 13		
	Detachable parts are removed and subjected, if necessary, to the relevant treatment with the main part. However, if the instructions slate the a part has to be removed for user maintenance and a tool is needed, this part is not removed		
15.2	Appliances subject to spillage of liquid in normal use shall be constructed so that such spillage does not affect their electricalinsulation		
	Appliances with type X attachment, except those having a specially prepared cord, are fitted with the lightest permissible type of flexible cord of the smallest cross-sectional area specified in Table 13		
	Appliances incorporating an appliance inlet arc tested with or without an appropriate connector in position, whichever is most unfavourable		
	Detachable parts are removed		
	The liquid container of the appliance is completely filled with water containing approximately 1 percent NaCl and a further quantity, equal to 15 percent of the capacity of the container or 0.25 I, whichever is the "renter, is poured in steadily over a period of 1 min		
	The appliance shall then withstand the electric strength lest of 16.3 and inspection shall show that there is no trace of water on insulation that could result in a reduction of clearances or creepage distances below the values specified in 29		
15.3	Appliances shall be proof against humid conditions that may occur in normal use		

	Appliances that were subjected to the tests of 15.1 or 15.2 are placed in normal ambient conditions for24 h		
	Cable entries, if any, are left open. If knock-outs are provided, one of them is opened. Detachable parts are removed and subjected, if necessary, to the humidity lest with the main part.		
	The humidity test is carried out for 48 h in a humidity cabinet containing air with a relative humidity not less than 90 percent. The temperature of the air is maintained within I K of any convenient value *t* between 15°C and 35°C. Before being placed in the humidity cabinet, the appliance is brought to a temperature *oft* °C		
	The appliance shall then withstand the tests of 16 in the humidity cabinet or in the room in which the appliance was brought to the prescribed temperature after reassembly of those parts that may have been removed		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 21
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

.....
(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
16	**Leakage current and electric strength**		
16.1	The leakage current of the appliance shall not be excessive and its electric strength shall be adequate		
	Protective impedance is disconnected from live parts before carrying out the tests		
	The tests are carried out on the appliance at room temperature and not connected to the supply mains		
16.2	An ac test voltage is applied between live parts and accessible metal parts that are connected to metal foil having an area not exceeding 20 cm x 10 cm in contact with accessible surfaces of insulating materials The test voltage is,		
	a) 1,06 times rated voltage, for single-phase appliances;		
	b) 1,06 times rated voltage, divided by 3 , for three-phase appliances		
	The leakage current is measured within 5 s after the application of the test voltage		
	The leakage current shall not exceed the following values:		
	a)for class II appliances 0.21 mA		
	b)for class III appliances 0.5 mA		
	c)for portable class I appliances 0.21 mA		
	d)for stationary class I motor-operated appliances 3.5 mA		
	e)for stationary class I heating appliances 0.21 mA or 0.21 mA per kW rated power input of the appliance with a maximum of 1.5 mA, whichever is higher		
	The values specified above are doubled if all controls have an off position in all poles. They are also doubled if		

	a) the appliance has no control other than a thermal cut-out, or		
	b) all thermostats, temperature limiters and energy regulators do not have an off position, or		
	c) The appliance has radio interference filters. In this case the leakage current with the filterdisconnected shall not exceed the limits specified.		
16.3	Immediately after the test of 16.2, the insulation is subjected to a voltage of substantially sinusoidal waveform having a frequency of 50 Hz or 60 Hz for 1 min. The values of the test voltage for different types of insulation are given in table 7.		
	No breakdown shall occur during the test		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 04
Total No. of Applicable Tests =
No. of tests for which the sample passed =
Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.
.....

(Approving Authority)

Clause No.	Test / Requirement name		
17	**Overload protection of transformers and associated circuits**		
	Appliances incorporating circuits supplied from a transformer shall be constructed so that in the event of short circuits which are likely to occur in normal) use, excessive temperatures do not occur in the transformer or in the circuits associated with the transformer		
	The temperature rise of the insulation of the conductors of safety extra-low voltage circuits shall not exceed the relevant value specified in Table 3 by more than 15 K		
	The temperature of windings shall not exceed the values specified in Table 8. However, these limits do not apply to fail-safe transformers complying with 15.5 of 1S/IEC 61558-1		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 04
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

.....
(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
18	**Endurance**		
	Requirement and tests re specified in part 2 of this standard, when necessary		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 01
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

.....
(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
19	**Abnormal operations**		
19.1	Appliances shall be constructed so that as a result of abnormal or careless operation, the risk of fire, mechanical damage impairing safety or protection against electric shock is obviated as far as is practicable		
	Electronic circuits shall be designed and applied so that a fault condition will not render the appliance unsafe with regard to electric shock, fire hazard, mechanical hazard or dangerous malfunction		
	Appliances incorporating heating elements are subjected to the tests of 19.2 and 19.3. In addition, such appliances having a control that limits the temperature during 11 are subjected to the tests of 19.4 und, when applicable, to the test of 19.5. Appliances incorporating PTC heating elements are also subjected to the test of 19.6.		
	Appliances incorporating motors are subjected to the tests of 19.7 to 19.10, as applicable		
	Appliances incorporating electronic' circuits are also subjected to the tests of 19.11 and 19.12, as applicable		
	Unless otherwise specified, only one abnormal condition is simulated at any one time		
	Unless otherwise specified, compliance with the tests of this clause is checked as described in 19.13		

19.2	Appliances with heating elements are tested under the conditions specified in 11 but with restricted heat dissipation. The supply voltage, determined prior to the lest, is that required to provide a power input of 0.85 times rated power input under normal operation when the power input has stabilized. This voltage is maintained throughout the test		
19.3	The lest of 19.2 is repeated but with a supply voltage, determined prior to the test, equal to that required to provide a power input of 1.24 times rated power input under normal operation when the power input has stabilized. This voltage is maintained throughout the test		
19.4	The appliance is tested under the conditions specified in 11. Any control that limits the temperature during the test of 11 is short-circuited		
19.5	The test of 19.4 is repeated on Class I appliances incorporating tubular sheathed or embeddedheating elements. However, controls are not short-circuited but one end of Ihe clement is connected to the sheath of the heating element		
	This test is repeated with the polarity of the supply to the appliance reversed and with the other end of the element connected to the sheath		
	The test is not carried out on appliances intended to be permanently connected to fixed wiring and on appliances where an all-pole disconnection occurs during the test of 19.4		
19.6	Appliances with PTC heating elements are supplied at rated voltage until steady conditions with regard to power input and temperature are established		

	The working voltage of the PTC heating element is increased by 5 percent and the appliance is operated until steady conditions are re-established. The voltage is then increased in similar steps until 1.5 times working voltage is reached, or until the PTC heating element ruptures, whichever occurs first		
19.7	The appliance is operated under stalled conditions by		
	a)locking the rotor if the locked rotor torque is smaller than the full load torque;		
	b)locking moving parts of other appliances		
	Appliances incorporating motors and having capacitors in the circuit of an auxiliary winding are operated with the rotor locked, the capacitors being open-circuited one at a time. The lest is repeated with the capacitors short-circuited one at a time unless they are of class P2 of IS 1709		
	For each of the tests, appliances provided with a timer or programmer are supplied at ratedvoltage for a period equal to the maximum period allowed by the timer or programmer		
	Other appliances are supplied at rated voltage for a period		
	a) of 30 s for		
	1)hand-held appliances,		
	2)appliances that have to be kept switched on by hand or foot, and appliances that are continuously loaded by hand;		
	b)of 5 min for other appliances that are operated while attended;		
	c) until steady conditions are established, for other appliances		

	Spring-drive clocks having an electrically operated winding mechanism incorporating capacitors or resistors to reduce the motor voltages, are operated with the rotor locked, capacitors or resistors being short-circuited one at a time.		
19.8	One phase of appliances incorporating three-phase motors is disconnected. Theappliance is then operated under normal operation and supplied at rated voltage for theperiod specified in 19.7.		
19.9	A running overload test is carried out on appliances incorporating motors that areintended to be remotely or automatically controlled or liable to be operated continuously		
	During the test the winding temperature shall not exceed		
	a)140 °C, for class A winding insulation;		
	b)155 °C, for class E winding insulation		
	c)165 °C, for class B winding insulation;		
	d)180 °C, for class F winding insulation;		
	e)200 °C, for class H winding insulation;		
	f)220 °C, for class 200 winding insulation;		
	g)240 °C, for class 220 winding insulation;		
	h)270 °C, for class 250 winding insulation.		
19.10	Appliances incorporating series motors are operated with the lowest possible load and supplied at 1.3 times rated voltage for 1 min.		
19.11	Electronic circuits are checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless they comply with the conditions specified in 19.11.1.		

	Appliances incorporating a protective electronic circuit are subjected to the tests of 19,11.3 and19.11.4		
	Appliances having a switch with an off position obtained by electronic disconnection, or a switch that can place the appliance in a stand-by mode, are subjected to the tests of 19.11.4		
	If the safety of the appliance under any of the fault conditions depends on the operation of a miniature fuse-link complying with IS/IEC 60127, the test of 19,12 is carried out		
	During and after each test, the temperature of the windings shall not exceed the values specified in Table 8. However, these limits do not apply to fail-safe transformers complying with 15.5 of IS 1401. The		
	The appliance shall comply with the conditions specified in 19.13. Any current flowing through protective impedance shall not exceed the limits specified in 8.1.4		
	If a conductor of a printed circuit board becomes open-circuited, the appliance is considered to have withstood the particular test, provided all three of the following conditions are met		
	a)the base material of the printed circuit board withstands the test of annex E,		
	b)any loosened conductor does not reduce clearances or creepage distances between live parts and accessible metal parts below the values specified in clause 29,		
	c)the appliance withstands the tests of 19.11.2 with the open-circuited conductor bridged		
19.11.1	Fault conditions (a) to (f) specified in 19.11.2 are not applied to circuits or parts of circuits when both of the following conditions are met		

	a)the electronic circuit is a low-power circuit as described below;		
	b) protection against electric shock, fire hazard, mechanical hazard or dangerous malfunction of other parts of the appliance does not rely on the correct functioning of the electronic Circuit.		
19.11.2	The following fault conditions are considered and, if necessary, applied one at a time, consequential faults being taken into consideration:		
	a)short circuit of functional insulation if clearances or creepage distances are less than the values specified in clause 29;		
	b)open circuit at the terminals of any component;		
	c)short circuit of capacitors, unless they comply with IEC 60384-14;		
	d)short circuit of any two terminals of an electronic component, other than an integrated circuit. This fault condition is not applied between the two circuits of an optocoupler;		
	e)failure of triacs in the diode mode;		
	f) failure of an integrated circuit. In this case the possible hazardous situations of theappliance are assessed to ensure that safety does not rely on the correct functioning ofsuch a component. All possible output signals are considered for faults occurring withinthe integrated circuit. If it can be shown that a particular output signal is unlikely to occur,then the relevant fault is not considered.		
	Fault condition 19.11.2 (f) is applied to encapsulated and similar components, if the circuit cannot be assessed by other methods		

	Positive temperature coefficient resistors are not short- circuited if they are used within the manufacturer's specification. However, PTC-S thermistors are short- circuited		
	In addition, each low-power circuit is short-circuited by connecting the low-power point to the pole of the supply source from which the measurements were made		
	For simulation of the fault conditions, the appliance is operated under the conditions specified in 11 but supplied al rated voltage		
	When any of the fault conditions are simulated, the duration of the test is		
	a)as specified in 11.7 but only for one operating cycle and only if the fault cannot berecognized by the user, for example, a change in temperature;		
	b) as specified in 19.7, if the fault can be recognized by the user, for example, when the motor of a kitchen machine stops		
	c)until steady conditions are established, for circuits continuously connected to the supply mains, for example, stand-by circuits		
	In each case, the test is ended if interruption of the supply occurs within the appliance		
19.11.3	If the appliance incorporates a protective electronic circuit which operates to ensure compliance with 19, the relevant test is repeated with a single fault simulated, as indicated in (a) to (f) of 19.11.2,		

19.11.4	Appliances havingaswitch with an off position obtained by electronic disconnection, or a switch that can be placed in the stand-by mode, are subjected to the tests of 19.11.4.1 to 19.11.4.7. The tests are carried out with the appliance supplied at rated voltage, the switch being set in the off position or in the stand-by mode.		
	Appliances incorporating a protective electronic circuit are subjected to the tests of 19.11.4.1 to 19.11.4.7. The tests are carried out after the protective electronic circuit has operated during the relevant tests of 19 except 19.2 and 19.11.3. However, appliances that are operated for 30 s or 5 min during the test of 19.7 are not subjected to the tests for electromagnetic phenomena		
19.11.4.1	The appliance is subjected to electrostatic discharges in accordance with IS 14700 (Part 4/Sec 2) test level 4 being applicable		
19.11.4.2	The appliance is subjected to radiated fields in accordance with IS 14700 (Part 4/Sec 3) test level 3 being applicable		
19.11.4.3	The appliance is subjected to fast transient bursts in accordance with IS 14700 (Part 4/Sec 4). Test level 3 is applicable for signal and control lines. Test level 4 is applicable for-the power supply lines. The bursts are applied for 2 min with a positive polarity and for 2 min with a negative polarity		

19.11.4.4	The power supply terminals of the appliance are subjected to voltage surges in accordance with IS 14700 (Part 4/Sec5), five positive impulses and five negative impulses being applied at the selected points. 1 Test level 3 is applicable for the line-to-line coupling mode, a generator having a source impedance of 2 Ω being used. Test level 4 is applicable for the line-to-earth coupling mode, a generator having a source impedance of 12 Ω being used. Earthed heating elements in class I appliances are disconnected during this test. For appliances having surge arresters incorporating spark gaps, the test is repeated at a level that is 95 percent of the flashover volt		
19.11.4.5	The appliance is subjected to injected currents in accordance with IEC 61000-4-6, test level 3 being applicable. During the test, all frequencies Between 0.15 MHz to 80 MHz are covered. NOTE — The dwell time for each frequency is to be sufficient to observe a Possible malfunction of the protective electronic circuit.		
19.11.4.6	The appliance is subjected to the Class 3 voltage dips and Interruptions in accordance with IS 14700 (Part 4/Sec 11). The values specified in Table 1 and Table 2 of IS 14700 (Part 4/Sec 11) are applied at zero crossing of the supply voltage.		
19.11.4.7	The appliance is subjected to mains signals in accordancewith IEC 61000-4-13, test level class 2 being applicable.		

19.12	If safety of the appliance depends upon the operation of a miniature fuse-link complying with IS/IEC 60127 during any of the fault conditions specified in 19.11.2, the test is repeated but with the miniature fuse-link replaced by an ammeter. If the current measured		
	a). does not exceed 2.1 times the rated current of the fuse-link, the circuit is not considered tobe adequately protected and the test is carried out with the fuse-link short-circuited		
	b) is at least 2.75 times the rated current of the fuse-link, the circuit is considered to beadequately protected.		
	c) is between 2.1 times and 2.75 times the rated current of the fuse-link, the fuse link isshort-circuited and the test is carried out		
	1) for the relevant period or for 30 min, whichever is the shorter, for quick acting fuse links;		
	2) acting fuse-!inks; and		
	3) for the relevant period or for 2 min, whichever is the shorter, for time lag fuse- links.		
19.13	During the tests the appliance shall not emit flames, molten metal, or poisonous or ignitable gas in hazardous amounts and temperature rises shall not exceed the values shown in Table 9		
	After the tests and when the appliance has cooled to approximately room temperature, the enclosure shall not have deformed to such an extent that compliance with 8 is impaired and the appliance shall comply with 20.2, if it can still be operated		

	When the insulation, other than that of Class III appliances, has cooled down to approximately room temperature, it shall withstand the electric strength test of 16.3, the test voltage, however, being as specified in Table 4		
	For appliances which are immersed in or filled with conducting liquid in normal use, the appliance is immersed in or filled with water for 24 h before the electric strength test is carried out		
	The appliance shall not undergo a dangerous malfunction, and there shall be no failure of protective electronic circuits if the appliance is still operable		
	Appliances tested with an electronic switch in the off position, or in the stand-by mode, shall not become operational		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 56
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
20	**Stability and mechanical hazards**		
	Appliances, other than fixed appliances and handheld appliances, intended to be used on a surface such as the floor or a table shall have adequate stability		
	The appliance is placed in any normal position of use on a plane inclined at an angle of 10° tothe horizontal, the supply cordresting on the inclined plane in the most unfavorableposition. However, if part of an appliance comes into contact with the horizontal supportingsurface when the appliance is tilted through an angle of 10°, the appliance is placed on ahorizontal support and tilted in the mostunfavourable direction through an angle of 10°.		
	Appliances provided with doors are tested with the doors open or closed, whichever is the more unfavourable		
	Appliances intended to be filled with liquid by the user in normal) use are tested empty or filled with the most unfavourable quantity of water up to the capacity indicated in the instructions		
	The appliance shall not overturn		
	The test is repeated on appliances with heating elements with the angle of inclination increased to 15°. If the appliance overturns in one or more positions, it is subjected to the tests of 11 in each of these overturned positions.		
	During this test, temperature rises shall not exceed the ; values shown in Table 9		

20.2	Moving parts of appliances shall, as far as is compatible with the use and working of the appliance, be positioned or enclosed to provide adequate protection against personal injury in normal use.		
	Protective enclosures, guards and similar parts shall be non-detachable parts and shall have adequate mechanical strength.		
	The unexpected reclosure of self-resetting thermal cut-outs and overcurrent protective devices shall not cause a hazard.		
	Compliance is checked by inspection, by the tests of 21.1 and by applying a force notexceeding5 N by means of a test probe that is similar to test probe B of IS 1401 but having a circular stop face with a diameter of 50 mm, instead of the non-circular face.		
	For appliances provided with movable devices such as those intended for varying the tension of belts, the least with the test probe is carried out with these devices adjusted to the most unfavourable position within their range of adjustment. If necessary, belts are removed. It shall not be possible to touch dangerous moving parts with this test probe.		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 10
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
21	**Mechanical strength**		
21.1	Appliances shall have adequate mechanical strength and be constructed to withstand such rough handling that may be expected in normal use		
	The appliance is rigidly supported and three blows, having an impact energy of 0'20joule, The blows are not applied to spindles for hands, The blows are only applied to dail glass, if the clock fails to comply with the requirements of 8.1 with the dial glass removed		
	If necessary, the blows are also applied to handles, levers, knobs and similar parts and to signal lamps and their covers but only if the lamps or covers protrude from the enclosure by more than 10 mm or if their surface area exceeds 4 cm^2. Lamps within the appliance and their covers are only tested, if they are likely to be damaged in normal use		
	After the test, the appliance shall show no damage that could impair compliance with this standard and compliance with8.1, 15.1 and clause 29 shall not be impaired. In case of doubt, supplementary insulation and reinforced insulation are subjected to the electric strength test of 16.3		
	If there is doubt as to whether a defect has occurred by the application of the precedingblows, this defect is neglected and the group of three blows is applied to the same place on anew sample which shall thenwithstand the test.		

21.2	Accessible parts of solid insulation shall have sufficient strength to prevent penetration by sharp implements.		
	Compliance is checked by subjecting the insulation to the following test, unless the thickness of supplementary insulation is at least 1 mm and that of reinforced insulation is at least 2 mm		
	The insulation is raised to the temperature measured during the least of II. The surface of the insulation is then scratched by means of a hardened steel pin, the end of which has the form of a cone with an angle of 40°, Its tip is rounded with a radius of 0.25 ± 0.02 mm. The pin is held at an angle of 80° to 85° to the horizontal and loaded so that the force exerted along its axis is 10 ± 0.5 N. These scratches are made by drawing the pin along the surface of the insulation -at a speed of approximately 20 mm/s. Two parallel scratches are made. They are spaced sufficiently apart so that they are not affected by each other, their length covering approximately 25 percent of the length of the insulation. Two similar scratches are made at 90“ to the first pair without crossing them		
	The test fingernail of Fig. 8 is then applied to the scratched surface with a force of approximately 10 N. No further damage, such as separation of the material, shall occur. The insulation shall then withstand Ihe electric strength test of 16.3 The hardened steel pin is then appliedperpendicularly with a force of 30 ± 0.5 N to an unscratched part of Ihe surface. The insulation shall then withstand the electric strength test of 16.3 with the pin still applied and as one of the electrodes		

*Total number of Requirements to be observed / inspected = 00

Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted =11
Total No. of Applicable Tests =
No. of testsfor which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
22	**Construction**		
22.1	If the appliance is marked with the first numral of the IP system, (the relevant requirements of IS 12063 shall be fulfilled)		
22.2	For stationary appliances, means shall be provided to ensure all-pole disconnection from the supply mains. Such means shall be one of the following *		

	a)asupply cordfitted with a plug.		
	b)a switch complying with 24.3;		
	c)a statement in the instructions that a disconnection incorporated in the fixed wiring is to beprovided.		
	d) an appliance inlet.		
	Single – pole switches, and single – pole protective that disconnect heating elements from supply mains, in single – phase, permanently connected Class I appliance shall be connected to the phase conductor.		
22.3	Appliances with pins for insertion into socket- outlets shall not impose undue strain on these socket- outlets. The means for retaining the pins shall withstand the forces to which the pins arc likely to be subjected in normal use		
	The torque that has to be applied to maintain the engagement face of the socket-outlet in the vertical plane shall not exceed 0.25 Nm		
	A new sample of the appliance is firmly held so that the retention of the pins is not affected. The appliance is placed in a healing cabinet for 1 h at a temperature of 70 ± 2 "C. The appliance is then removed from the heating cabinet and a pull force of 50 N is immediately applied for I min to each pin along their longitudinalaxes		
	When the appliance has cooled down to room .' temperature the pins shall not have been displaced by more than 1 mm		
	Each pin is then subjected in turn to a torque of 0.4 Nm, which is applied for I min in each direction. The pins shall not rotate unless rotation does not impair compliance with this standard		
22.4	Appliances for heating liquids and appliances causing undue vibration shall not be provided with pins for insertion into socket-outlets*		

22.5	Appliances intended to be connected to the supply mains by means of a plug shall be constructed so that in normal use there is no risk of electric shock from charged capacitors when the pins of the plug are touched		
	The appliance is supplied at rated voltage. Any switch is then placed in the off position and the appliance is disconnected from the supply mains at the instant of voltage peak. One second after disconnection, the voltage between the pins of the plug is measured with an instrument that does not appreciably affect the value to be measured		
22.6	Appliances shall be constructed so that their electrical insulation cannot be affected by water that could condense on cold surfaces or by liquid that could leak from containers, hoses, couplings and similar parts of the appliance. The electrical insulation of Class II appliances and Class II constructions shall not be affected if a hose ruptures or a seal leaks		
	Drops of coloured water solution are applied by a syringe to parts inside the appliance where leakage of a liquid could occur and affect electrical insulation. The appliance is in operation or at rest, whichever is the more unfavourable		
	After this test, inspection shall show that there is no trace of liquid on windings or insulation that could result in a reduction of creepage distances below the values specified in 29.2		
22.7	Appliances containing liquid or gases in normal use or having steam-producing devices shall incorporate adequate safeguards against the risk of excessive pressure		

22.8	For appliances having compartments to which access can be gained without the aid of a tool and that are likely to be cleaned in normal use, the electrical connections shall be arranged so that they are not subject to pulling during cleaning		
22.9	Appliances shall be constructed so that parts such as insulation, internal wiring, windings, commentators and slip rings are not exposed to oil, grease or similar substances, unless the substance has adequate insulating properties so that compliance with the standard is not impaired		
22.10	It shall not be possible to reset voltage- maintained non-self-resetting thermal cut-outs by (he operation of an automatic switching device incorporated within the appliance.*		
	Reset buttons of non-self-resetting controls shall be located or protected so that their accidental resetting is unlikely to occur if this could result in a hazard*		
22.11	Non-detachable parts that protect against access to live parts, moisture or contact with moving parts shall be flexed in a reliable manner and withstand the mechanical stress occurring during normal use. Snap- in devices used for fixing such parts shall have an obvious locked position. The fixing properties of snap- in devices used in parts that are likely to be removed during installation or servicing shall be reliable		
	Parts that are likely to be removed during installation or servicing are disassembled and assembled 10 times before the test is carried out		

	The test is carried out at room temperature. However, if compliance may be affected by the temperature of the appliance, the lest is also carried out immediately after it has been operated under the condition specified in 11		
	The test is applied to all parts that are likely to be detachable whether or not they are fixed by screws, rivets or similar parts		
	A force is applied without jerks for 10 s in the most unfavourable direction to parts likely to be weak. The force is as follows		
	a)push force, 50 N;		
	b)pull force:		
	if the shape of the part is such that the fingertips cannot easily slip off, 50 N		
	if the projection of the part that is gripped is less than 10 mm in the direction of removal, 30 N.		
	The push force is applied by test probe 11 of IS 1401		
	The pull force is applied by a suitable means, such as a suction cup, so that the test resultsare not affected. While the force is being applied, the test fingernail of figure 7 is inserted inany aperture or joint with a force of 10 N. The fingernail is then slid sideways with a force of10 N but is not twisted or used as a lever		
	If the shape of the part is such that an axial pull is unlikely, the pull force is not applied butthe test fingernail is inserted in any aperture or joint with a force of 10 N and is then pulled for10 s by means of the loop with a force of 30 N in the direction of removal		
	If the part is likely to be twisted, the following torque is applied at the same time as the pull orpush force		
	a)2 Nm, for major dimensions up to 50 mm		
	b)4 Nm, for major dimensions over 50 mm		

	This torque is also applied when the test fingernail is pulled by means of the loop		
	If the projection of the part which is gripped is less than 10 mm, the torque is reduced by 50 %.		
	Parts shall remain in the locked position and not become detached		
22.12	Handles, knobs, grips, levers and similar parts shall be fixed in a reliable manner so that they will not work loose in normal use if loosening could result in a hazard. If these parts are used to indicate the position of switches or similar components, it shall not be possible to fix them incorrectly if this could result in a hazard		
	Compliance is checked by inspection, by manual test and by trying to remove the part byapplying an axial force of		
	a) 15 N, if an axial pull is unlikely to be applied in normal use;		
	b) 30 N, if an axial pull is likely to be applied in normal use		
22.13	Appliances shall be constructed so that when handles are gripped in normal use,contact is unlikely between the operator's hand and parts having a temperature riseexceeding the value specified in table 3 for handles which are held for short periods only in normal use.		
22.14	Appliances shall have no ragged or sharp edges, other than those necessary for the functioning of the appliance, that could create a hazard for the user in normal use or during user maintenance*		
	Pointed ends of self-tapping screws or other fasteners shall be located so that they are unlikely to be touched by the user in normal use or during user maintenance		
22.15	Storage hooks and similar devices for flexible cords shall be smooth and well rounded.		

22.16	Automatic cord reels shall be constructed so that they do not cause		
	a) undue abrasion or damage to the sheath of the flexible cord;		
	b) breakage of conductor strands;		
	c) undue wear of contacts		
	Compliance is checked by the following test, which is carried out without passing currentthrough the flexible cord		
	Two-thirds of the length of the cord is unreeled. If the with draw able length of the cord is less than 225 cm, the cord is unreeled so that a length of 75 cm remains on the reel. An additional length of 75 cm of the cord is thenunreeled and pulled in a direction so that the greatest abrasion occurs to the sheath, taking into account the normal position of use of the appliance.Where the cord leaves the appliance, the angle between the axis of the cord during the testand the axis of the cord when it is unreeled without substantial resistance is approximately60°.The cord is allowed to be recoiled by the reel		
	The test is carried out 6 000 times at a rate of approximately 30 times per minute or at themaximum rate allowed by the construction of the cord reel if this is less		
	After this test, the cord and cord reel are inspected. In case of doubt the cord is subjected to theelectric strength test of 16.3, a test voltage of 1 000 V being applied between the conductors of the cord connected together and metal foil wrapped around the cord.		
22.17	Spacers intended to prevent the appliance from overheating walls shall be fixed sothat it is not possible to remove them from the outside of the appliance by hand or by meansof a screwdriver or a spanner		

22.18	Current-carrying parts and other metal parts, the corrosion of which could result in ahazard, shall be resistant to corrosion under normal conditions of use.		
22.19	Driving belts shall not be relied upon to provide the required level of insulation unlessthey are constructed to preventinappropriate replacement*		
22.20	Direct contact between live partsand thermal insulation shall be effectively preventedunless such material is non-corrosive, non-hygroscopic and non-combustible		
22.21	Wood, cotton, silk, ordinary paper and similar fibrous or hygroscopic material shall notbe used as insulation, unless impregnated.*		
22.22	Appliances shall not contain asbestos*		
22.23	Oils containing polychlorinated biphenyl (PCB) shall not be used in appliances*		
22.24	Bare heating elements shall be supported so that the heating conductor is unlikely tocome into contact with accessible metal parts if they rupture*		
22.25	Appliances, other than those of class III, shall be constructed so that sagging heating conductors cannot come into contact with accessible metal parts.*		
22.26	Class II appliances having parts of class III construction shall be constructed so that the insulation between parts operating at safety extra-low voltage and other live parts complies with therequirements for double insulation or reinforced insulation		
22.27	Parts connected by protective impedance shall be separated by double insulation or reinforced insulation		

22.28	For class II appliances connected in normal use to the gas mains or to the water mains, metal parts conductively connected to the gas pipes or in contact with the water shall be separated from live parts by double insulation or reinforced insulation.*		
22.29	Class II appliances intended to be permanently connected to fixed wiring shall be constructed so that the required degree of access to live parts is maintained after installation.*		
22.30	Parts of class II construction which serve as supplementary insulation or reinforced insulation, and which could be omitted during reassembly after servicing, shall be		
	a) fixed so that they cannot be removed without being seriously damaged, or		
	b) constructed so that they cannot be replaced in an incorrect position and if they are omitted, the appliance is rendered inoperable or manifestlyincomplete		
22.31	Clearances and creepage distances over supplementary insulation and reinforced insulation shall not be reduced below the values specified in clause 29 as a result of wear. If a part, such as a wire, screw, nut or spring, becomes loose or falls out of position, clearances and creepage distances between live parts and accessible parts shall not be reduced below the values specified for supplementary insulation		
	a)only the normal position of use of the appliance is taken into account;		
	b)it is not to be expected that two independent fixings will become loose at the same time;		

	c)parts fixed by means of screws or nuts and locking washers are not regarded as liable to become loose,provided that these screws or nuts are not required to be removed during the replacement of the supply cordorother servicing;		
	d)wires connected by soldering are not considered to be adequately fixed unless they are held in place near theterminals independently of the solder;		
	e)wires connected to terminals are not considered to be adequately secured unless an additional fixing isprovided near the terminal, so that in the case of stranded conductors, the fixing clamps both the insulation andconductor;		
	f) short rigid wires are not regarded as liable to be dislodged from a terminal if they remain in position when the terminal screw is loosened		
22.32	Supplementary insulation and reinforced insulation shall be constructed or protected so that the deposition of pollution resulting from wear of parts within the appliance does not reduce clearances or creepage distances below the values specified in clause 29		
	Parts of natural or synthetic rubber used as supplementary insulation shall be resistant to ageing or be located and dimensioned so that creepage distances are not reduced below the values specified in 29.2, even if cracks occur		
	Ceramic material which is not tightly sintered, similar materials or beads alone shall not beused as supplementary insulation or reinforced insulation		
	If the rubber part has to be resistant to ageing than ageing test will be performed as per this standard		

22.33	Conductive liquids that are or may become accessible in normal use shall not be in direct contact with live parts. Electrodes shall not be used for heating liquids.*		
	For class II construction, conductive liquids that are or may become accessible in normaluse shall not be in direct contact with basic insulation or reinforced insulation.*		
	For class II construction, conductive liquids which are in contact with live parts shall not be in direct contact with reinforced insulation.*		
22.34	Shafts of operating knobs, handles, levers and similar parts shall not be live unlessthe shaft is inaccessible when the part is removed		
22.35	For constructions other than those of class III, handles, levers and knobs which are held or actuated in normal use shall not become live in the event of an insulation fault. If these handles, levers or knobs are of metal and if their shafts or fixings are likely to become live in the event of an insulation fault, they shall be adequately covered by insulating material or their accessible parts shall be separated from their shafts or fixings by supplementary insulation. Hands are not considered as being actuated in normal use, unless they have to be touched to alter the time setting		
	For stationary appliances this requirement does not apply to handles, levers and knobs, other than those of electrical components, provided that they are reliably connected to an earthing terminal or earthing contact or separated from live parts by earthed metal.*		

22.36	For appliances other than those of class III, handles which are continuously held in the hand in normal use shall be constructed so that when gripped in normal use, the operator's hand is not likely to touch metal parts unless they are separated from live parts by double insulation or reinforced insulation.		
22.37	For class II appliances, capacitors shall not be connected to accessible metal partsand their casings, if of metal, shall be separated from accessible metal parts by supplementary insulation		
	This requirement does not apply to capacitors complying with the requirements for protectiveimpedance specified in 22.42		
22.38	Capacitors shall not be connected between the contacts of a thermal cut-out.*		
22.39	Lamp holders shall be used only for the connection of lamps.*		
22.40	Motor-operated appliances and combined appliances which are intended to be moved while in operation, or which have accessible moving parts, shall be fitted with a switch to control the motor. The actuating member of this switch shall be easily visible and accessible.*		
22.41	Appliances shall not incorporate components, other than lamps, containing mercury.*		
22.42	Protective impedance shall consist of at least two separate components whose impedance is unlikely to change significantly during the lifetime of theappliance. If any one ofthe components is short-circuited or open-circuited the valuesspecified in 8.1.4 shall not beexceeded.		
22.43	Appliances which can be adjusted for different voltages shall be constructed so thataccidental changing of the setting is unlikely to occur.		

22.44	Appliances shall not have an enclosure that is shaped and decorated so that theappliance is likely to be treated as a toy by children.*		
22.45	When air is used as reinforced insulation, the appliance shall be constructed so thatclearances cannot be reduced below the values specified in 29.1.3 due to deformation as aresult of an external force applied to theenclosure.		
22.46	Software used in protective electronic circuits shall be software Class B or software Class C		
22.47	Appliances intended to be connected to the water mains shall withstand the water pressure expected in normal use		
22.48	Appliances intended to be connected to the water mains shall be constructed to prevent backsiphon age of non-potable water into the water mains		

*Total number of Requirements to be observed / inspected = 22
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted =63
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failedin the requirement tested.
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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
23	**Internal wiring**		
23.1	Wire ways shall be smooth and free from sharp edges.*		
	Wires shall be protected so that they do not come into contact with burrs, cooling fins orsimilar edges which may cause damage to their insulation.*		
	Holes in metal through which insulated wires pass shall have smooth well-rounded surfacesor be provided with bushings.*		
	Wiring shall be effectively prevented from coming into contact with moving parts.*		
	Internal wiring and electrical connections between different parts of the appliance shall be adequately protected or enclosed.*		
23.2	Beads and similar ceramic insulators on live wires shall be fixed or located so that theycannot change their position or rest on sharp edges. If beads are inside flexible metalconduits, they shall be contained within an insulating sleeve, unless the conduit cannot movein normal use.		
23.3	Different parts of an appliance that can move relative to each other in normal use orduring user maintenance shall not cause undue stress to electrical connections and internal conductors, including those providing earthing continuity. Flexible metallic tubes shall notcause damage to the insulation of the conductors contained within them. Open-coil springsshall not be used to protect the wiring. If a coiled spring, the turns of which touch one another,is used for this purpose, there shall be an adequate insulating lining in addition to theinsulation of the conductors		

	If flexing occurs in normal use, the appliance is placed in the normal position of use and issupplied at rated voltage and operated under normal operation		
	The movable part is moved backwards and forwards, so that the conductor is flexed through the largest angle allowed by the construction, the rate of flexing being 30 per minute. Thenumber of flexings is		
	a) 10 000, for conductors flexed during normal use;		
	b) 100, for conductors flexed during user maintenance		
	The appliance shall not be damaged to the extent that compliance with this standard isimpaired and it shall be fit for further use. In particular, thewiring and its connections shall withstand the electric strength test of 16.3, the test voltage being reduced to 1 000 V andapplied between live parts and accessible metal parts only.		
23.4	Bare internal wiring shall be rigid and fixed so that, in normal use, clearances or creepage distances cannot be reduced below the values specified in clause 29.		
23.5	The insulation of internal wiring shall withstand the electrical stress likely to occur innormal use.		
	The basic insulation shall be electrically equivalent to the basic insulation of cords complying with IS 694 or IS 9968 (Part 1) or comply with the following electric strength test		
	A voltage of *2* 000 V is applied for 15 min between the conductor and metal foil wrapped around the insulation. There shall be no breakdown		
23.6	When sleeving is used as supplementary insulation on internal wiring, it shall beretained in position by positive means		

23.7	Conductors identified by the colour combination green/yellow or by the colour green shall only be used for earthing conductors.*		
23.8	Aluminium wires shall not be used for internal wiring.*		
23.9	Stranded conductors shall not be consolidated by lead-tin soldering where they are subjected to contact pressure, unless the clamping means is constructed so that there is no risk of bad contact due to cold flow of the solder.*		
23.10	The insulation and sheath of internal wiring, incorporated in external hoses for the connection of an appliance to the water mains, shall be at least equivalent to that of light polyvinyl chloride sheathed flexible cord.*		

*Total number of Requirements to be observed / inspected = 09
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 09
Total No. of Applicable Tests =
No. of testsfor which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
24	**Components**		
24.1	Components shall comply with the safety requirements specified in the relevant Indian Standards wherever exists as far as they reasonably apply		
	Unless otherwise specified, the requirements of 29 of this standard apply between live parts of components and accessible parts of the appliance		
	Motors are not required to comply with IS 996 or IS 325		
	Unless components have been previously tested and found to comply with the relevant Indian Standards, wherever exists, for the number of cycles specified, they are tested in accordance with 24.1.1 to 24.1.6		
	Components that have not been separately tested and found (o comply with the relevant Indian Standards, wherever exists, components that are not marked or not used in accordance with their marking, are tested in accordance with the conditions occurring in the appliance, the number of samples being that required by the relevant standard		
24.1.1	The relevant standard for capacitors likely to be permanently subjected to the supply voltage and used for radio interference suppression or for voltage dividing is ISQC 302-100, If they have lo be tested, they are tested in accordance with Annex F		
24.1.2	The relevant standard for safety isolating transformers is IS/IEC 61558-2-6. If they have to be tested, they are tested in accordance with Annex G.		

24.1.3	The relevant standard for switches is IS/IEC 61058. The number of cycles of operation declared for 7.1.4 of IS/IEC 61058 shall be at least 10000. If they have to be tested, they are tested in accordance with Annex H.		
24.1.4	The relevant standard for automatic controls is IS/IEC 60730-1 together with its relevantpart 2.		
	The number of cycles of operation declared for 6.10 and 6.11 of IEC 60730-1 shall not be less than the following:		
	a) thermostats 10 000		
	b)temperature limiters 1 000		
	c)self-resetting thermal cut-outs 300		
	d)voltage mentioned non-self-resetting thermal cut-outs 30		
	e)other non-self-resetting thermal cutout		
	f)timers 3 000		
	g)energy regulators 10 000		
	If automatic controls have to be tested, they are also tested in accordance with11.3.5 to 11.3.8 and clause 17 of IS/IEC 60730-1 as type 1 controls.		
	Thermal motor protectors are tested in combination with their motor under the conditions specified in Annex D		
	For water valves containing live parts and that are incorporated in external hoses for connection of an appliance to the water mains, the degree of protection provided by enclosures against harmful ingress of water declared shall be IPX7		
24.1.5	The relevant standard for appliance couplers is IS/IEC 60320-1. However, for Appliances classified higher than IPX0, the relevant standard is IS/ IEC 60320-2-3.		

24.1.6	The relevant standard for small lamp holders similar to E10 lamp holders is IS 10276, the requirements for E10 lamp holders being applicable.		
24.2	Appliances shall not be fitted with		
	a) switches or automatic controls in flexible cords		
	b)devices that cause the protective device in the fixed wiring to operate in the event of afault in the appliance		
	c) thermal cut-outs that can be reset by a soldering operation		
24.3	Switches intended to ensure all-pole disconnection of stationary appliances, as required in 22.2, shall be directly connected to the supply terminals and shall have a contact separation in all poles, providing full disconnection under overvoltage category IIIconditions		
24.4	Plugs and socket-outlets for extra-low voltage circuits, and those used as terminal devices for heating elements, shall not be interchangeable with plugs and socket-outlets listed in IS 1293 or with connectors and appliance inlets complying with thestandard sheets of IEC 60320-1		
24.5	Capacitors in auxiliary windings of motors shall be marked with their rated voltage and their rated capacitance and shall be used in accordance with these markings		
24.6	The working voltage of motors directly connected to the supply mains and having basic insulation that is inadequate for the rated voltage of the appliance shall not exceed 42 V. In addition, they shall comply with therequirements of annex I.		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted =24
Total No. of Applicable Tests =

No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
25	**Supply connection and external flexible cords**		
25.1	Appliances, other than those intended to be permanently connected to fixed wiring,shall be provided with one of the following means for connection to the supply mains:*		
	a)supply cord fitted with a plug;*		
	b)an appliance inlet having at least the same degree of protection against moisture asrequired for the appliance;*		
	c)pins for insertion into socket-outlets.*		
25.2	Appliances, other than stationary appliances for multiple supply, shall not be providedwith more than one means of connection to the supply mains. Stationary appliances formultiple supply may be provided with more than one means of connection provided that therelevant circuits are adequately insulated from each other.		
25.3	The connection to fixed wiring may be made before the clock has been fixed to its support unless the clock is classified IPX1		
25.4	For appliances intended to be permanently connected to the fixed wiring and having arated current not exceeding 16 A, cable and conduit entries shall be suitable for cables or conduits having a maximum overalldiameter shown in table 10.		
	Conduit entries, cable entries and knock-outs shall be constructed or located so that the introduction of the conduit or cable does not reduce clearances or creepage distances below the values specified in clause 29.		
25.5	Supply cords shall be assembled to the appliance by one of the following methods:*		
	a) type X attachment;		

	b) type Y attachment		
	c) type Z attachment, (allowed)		
	Type X attachments, other than those having a specially prepared cord, shall not be used forflat twin tinsel cords.*		
25.6	Plugs shall not be fitted with more than one flexible cord.*		
25.7	Supply cords shall not be lighter than		
	a) braided cord, if allowed in the relevant part 2;		
	b) ordinary tough rubber sheathed cord		
	c) ordinary polychloroprene sheathed flexible cord		
	d) supply cord may be flat non-sheathed cord		
	e) light polyvinyl chloride sheathed cord, for appliances having a mass not exceeding 3 kg;		
	f) ordinary polyvinyl chloride sheathed cord for applianceshaving a mass exceeding 3 kg.		
	Polyvinyl chloride sheathed cords shall not be used for appliances if the temperature rise ofexternal metal parts exceeds 75 K during the test of clause 11. However, they may be used if		
	a) the appliance is constructed so that the supply cordis not likely to touch such metal partsin normal use;		
	b) thesupply cord is appropriate for higher temperatures. In this case, type Y attachmentor type Z attachment shall be used.		
	The supply cord may be flat non-sheathed cords		
25.8	Conductors of supply cords shall have a nominal cross-sectional area not less than that shown in table 11.		
25.9	Supply cords shall not be in contact with sharp points or edges of the appliance.*		

25.10	The supply cord of class I appliances shall have a green/yellow core that isconnected to the earthing terminal of the appliance and to the earthing contact of the plug.*		
25.11	Conductors of supply cords shall not be consolidated by lead-tin soldering where they are subjected to contact pressure, unless the clamping means is constructed so thatthere is no risk of a bad contact due to cold flow of the solder.*		
25.12	The insulation of the supply cords shall not be damaged when molding the cord topart of the enclosure.*		
25.13	Inlet openings for supply cords shall be constructed so that the sheath of the supply cord can be introduced without risk of damage. Unless the enclosure at the inlet opening is insulating material, a non-detachable lining or non-detachable bushing shall be provided that complies with 29.3 for supplementary insulation. If the supply cord is unsheathed, a similar additional bushing or lining is required.*		
25.14	Appliances provided with a supply cord that are moved while in operation shall be constructed so that the supply cord is adequately protected against excessive flexing where it enters the appliance.		
	The part of the appliance that includes the inlet opening is fixed to the oscillating member so that, when the supply cord is at the middle of its travel, the axis of the cord where it entersthe cord guard or inlet is vertical and passes through the axis of oscillation. The major axis of the section of flat cords shall be parallel to the axis of oscillation		
	a)10 N, for cords having a nominal cross-sectional area exceeding 0.75 mm²		
	b)5 N, for other cords.		

	The distance X, as shown in figure 8, between the axis of oscillation and the point where the cord or cord guard enters the appliance, is adjusted so that when the oscillating member moves over its full range, the cord and load make the minimum lateral movement		
	The oscillating member is moved through an angle of 90° (45° on either side of the vertical),the number of flexings for type Z attachments being 20 000 and for other attachments10 000. The rate of flexing is 60 per minute.		
	The cord and its associated parts are turned through an angle of 90° after half the number offlexings, unless a flat cord is fitted.		
	During the test, the conductors are supplied at rated voltage and loaded with the ratedcurrent of the appliance		
	The test shall not result in		
	a) a short circuit between the conductors;		
	b) a breakage of more than 10 % of the strands of any conductor		
	c) separation of the conductor from its terminal;		
	d) loosening of any cord guard;		
	e) damage to the cord or cord guard which could impair compliance with this standard;		
	f)broken strands piercing the insulation and becoming accessible		
25.15	Appliances provided with a supply cord, and appliances intended to be permanentlyconnected tofixed wiring by a flexible cord, shall have a cord anchorage. The cord anchorageshall relieve conductors from strain, including twisting, at the terminals andprotect theinsulation of the conductors from abrasion.		
25.16	Cord anchorages for type X attachments shall be constructed and located so that		

	a) replacement of the cord is easily possible;		
	b) it is clear how the relief from strain and the prevention of twisting are obtained;		
	c) they are suitable for the different types of supply cord that may be connected, unless the cord is specially prepared;		
	d) the cord cannot touch the clamping screws of the cord anchorage if these screws are accessible, unless they are separated from accessible metal parts by supplementary insulation;		
	e) the cord is not clamped by a metal screw which bears directly on the cord;		
	f) at least one part of the cord anchorage is securely fixed to the appliance, unless it is part of a specially prepared cord;		
	g) screws which have to be operated when replacing the cord do not fix any other component. However, this does not apply if		
	1) after removal of the screws, or if the component is incorrectly repositioned, the appliance becomes inoperative or is obviously incomplete		
	2) the parts intended to be fastened by them cannot be removed without the aid of a tool during the replacement of the cord		
	h) if labyrinths can be bypassed the test of 25.15 is nevertheless withstood		
	J) for class 0 appliances, class 0I appliances and class I appliances, they are of insulating material or are provided with an insulating lining, unless failure of the insulation of the cord does not make accessible metal parts live;		
	k) for class II appliances, they are of insulating material or, if of metal, they are insulated from accessible metal parts by supplementary insulation		

	Compliance is checked by inspection and by the test of 25.15 under the following conditions		
	The tests are carried out with the lightest permissible type of cord of the smallest cross sectional area specified in table 13 and then with the next heavier type cord having the largest cross-sectional area specified. However, if the appliance is fitted with a specially prepared cord, the test is carried out with this cord		
	The conductors are placed in the terminals and any terminal screws tightened just sufficiently to prevent the conductors from easily changing their position. The clamping screws of thecord anchorage are tightened with two-thirds of the torque specified in 28.1.		
	Screws of insulating material bearing directly on the cord are fastened with two-thirds of thetorque specified in column I of table 14, the length of the slot in the screw head being taken as the nominal diameter of the screw.		
	After the test, the conductors shall not have moved by more than 1 mm in the terminals		
25.17	For type Y attachment and type Z attachment, cord anchorages shall be adequate		
25.18	Cord anchorages shall be arranged so that they are only accessible with the aid of a Tool or shall be constructed so that the cord can only be fitted with the aid of a tool.*		
25.19	Polyvinyl chloride insulated cord is allowed to be tied into a simple overband knot around a smooth pin.		

25.20	The insulated conductors of the supply cord for type Y attachment and type Z attachment shall be additionally insulated from accessible metal parts by basic insulation for class 0 appliances, class 0I appliances and class I appliances, and bysupplementary insulation for class II appliances. This insulation may be provided by the sheath of the supply cord or by other means		
25.21	The space for the connection of supply cords having type X attachment, or for the connection of fixed wiring, shall be constructed		
	a)so that it is possible to check that the supply conductors are correctly positioned and connected before fitting any cover		
	b)so that any cover can be fitted without risk of damage to the conductors or their insulation		
	c)for portable appliances, so that the uninsulated end of a conductor, should it become free from the terminal, cannot come into contact with accessible metal parts		
	Portable appliances are subjected to the following additional test unless they are provided with pillar terminals and the supply cord is clamped within 30 mm of them		
	The clamping screws or nuts are loosened in turn. A force of 2 N is applied to the conductor inany direction at a position adjacent to the terminal. The uninsulated end of the conductor shall not come into contact with accessible metal parts		
25.22	Appliance inlets shall		
	a) be located or enclosed so that live parts are not accessible during insertion or removal of the connector.*		
	b) be located so that the connector can be inserted without difficulty.*		

	c) be located so that, after insertion of the connector, the appliance is not supported by the connector when it is placed in any position of normal use on a flat surface;*		
	d) not be an appliance inlet for cold conditions if the temperature rise of external metal parts of the appliance exceeds 75 K during the test of clause 11, unless the supply cord isunlikely to touch such metal parts in normal use.*		
25.23	Interconnection cords shall comply with the requirements for the supply cord,except that		
	a)the cross-sectional area of the conductors of the interconnection cord is determined on the basis of the maximum current carried by the conductor during the test of clause 11 and not by the rated current of the appliance		
	b)the thickness of the insulation of the conductor may be reduced if the voltage of theconductor is less than the rated voltage.		
25.24	Interconnection cords shall not be detachable without the aid of a tool if compliancewith this standard is impaired when they are disconnected		
25.25	The dimensions of pins of appliances that are inserted into socket-outlets shall becompatible with the dimensions of the relevant socket-outlet. Dimensions of the pins and engagement face are to be in accordance with the dimensions of the relevant plug listed in IS 1293.		

*Total number of Requirements to be observed / inspected = 15
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 44
Total No. of Applicable Tests =
No. of tests for which the sample passed =
Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
26	**Terminals for external conductors**		
26.1	Appliances shall be provided with terminals or equally effective devices for the connection of external conductors. The terminals shall only be accessible after the removal of a non-detachable cover		
26.2	Appliances having type X attachment, except those having a specially prepared cord,and appliances for connection to fixed wiring shall be provided withterminals in which theconnections are made by means of screws, nuts or similar devices, unless the connectionsare soldered.		
	The screws and nuts shall not be used to fix any other component except that they may alsoclamp internal conductors if these are arranged so that they are unlikely to be displaced whenfitting the supply conductors		
	If soldered connections are used, the conductor shall be positioned or fixed so that reliance isnot placed upon the soldering alone to maintain it in position. However, soldering alone maybe used if barriers are provided so that clearances and creepagedistances between liveparts and other metal parts cannot be reduced below the values specified for supplementary insulation if the conductor becomes free at the soldered joint.		
26.3	Terminals for type X attachment and those for connection to fixed wiring shall be constructed so that they clamp the conductor between metal surfaces with sufficient contact pressure but without causing damage to the conductor.		

	The terminals shall be fixed so that when the clamping means is tightened or loosened		
	a) the terminal does not become loose;*		
	b) internal wiring is not subjected to stress;*		
	c) clearances and creepage distances are not reduced below the values specified in clause 29.*		
26.4	Terminals for type X attachment, except type X attachments having a specially prepared cord, and terminals for connection to fixed wiring, shall not require special preparation of the conductor. They shall be constructed or placed so that the conductor cannot slip out when clamping screws or nuts are tightened.		
26.5	Terminals for type X attachment shall be located or shielded so that if a wire of a stranded conductor escapes when the conductors are fitted, there is no risk of accidental connection to other parts that could result in a hazard.		
	A 8 mm length of insulation is removed from the end of a flexible conductor having a nominal cross-sectional area as specified in table 11. One wire of the stranded conductor is left freeand the other wires are fully inserted and clamped in the terminal. The free wire is bent,without tearing the insulation back, in every possible direction but without making sharp bendsaround barriers		
	There shall be no contact between live parts and accessible metal parts and, for class II constructions, between live parts and metal parts separated from accessible metal parts by supplementary insulation only.		

26.6	Terminals for type X attachment and for connection to fixed wiring shall allow the connection of conductors having the nominal cross-sectional areas shown in table 13. However, if a specially prepared cord is used, the terminals need only be suitable for the connection of that cord.		
26.7	Terminals for type X attachmentshall be accessible after removal of a cover or part ofthe enclosure.*		
26.8	Terminals for the connection of fixed wiring, including the earthing terminal, shall be located close to each other.*		
26.9	Terminals of the pillar type shall be constructed and located so that the end of a conductor introduced into the hole is visible, or can pass beyond the threaded hole for a distance equal to half the nominal diameter of the screw but at least 2.5 mm.		
26.10	Terminals with screw clamping and screwless terminals shall not be used for the connection of the conductors of flat twin tinsel cords unless the ends of the conductors are fitted with means suitable for use with screw terminals.		
	Compliance is checked by inspection and by applying a pull of 5 N to the connection.		
	After the test, the connection shall show no damage that could impair compliance with thisstandard		

26.11	For appliances having type Y attachment or type Z attachment, soldered, welded, crimped or similar connections may be used for the connection of external conductors. For class II appliances, the conductor shall be positioned or fixed so that reliance is not placed upon the soldering, crimping or welding alone to maintain the conductor in position. However, these methods may be used alone if barriers are provided so that clearances and creepage distances between live parts and other metal parts cannot be reduced below the values specified for supplementary insulation, if the conductor becomes free at the soldered or welded joint or slips out of the crimped connection.		

*Total number of Requirements to be observed / inspected = 05
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted =15

Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be not not applicable in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
27	**Provision for earthing**		
27.1	Accessible metal parts of class 0I appliances and class I appliances that may become live in the event of an insulation fault, shall be permanently and reliably connected to an earthing terminal within the appliance or to the earthing contact of the appliance inlet.*		
	Earthing terminals and earthing contacts shall not be connected to the neutral terminal		
	Class 0 appliances, class II appliances and class III appliances shall have no provision for earthing.		
	Safety extra-low voltage circuits shall not be earthed unless they are protective extra-lowvoltage circuits		
27.2	The clamping means of earthing terminals shall be adequately secured against accidental loosening.		
	Terminals for the connection of external equipotential bonding conductors shall allow theconnection of conductors having nominal cross-sectional areas of 2.5 mm² to 6 mm² and shallnot be used to provide earthing continuity between different parts of the appliance. It shall notbe possible to loosen the conductors without the aid of a tool.		
27.3	For appliances with supply cords, the arrangement of the terminals, or the length of the conductors between the cord anchorage and the terminals, shall be such that the currentcarrying conductors become taut before the earthing conductor if the cord slips out of the cord anchorage		

27.4	All parts of the earthing terminal intended for the connection of external conductorsshall be such that there is no risk of corrosion resulting from contact between these parts andthe copper of the earthing conductor or any other metal in contact with these parts.		
	Parts providing earthing continuity, other than parts of a metal frame or enclosure, shall be of metal having adequate resistance to corrosion. If these parts are of steel, they shall beprovided at the essential areas with an electroplated coatinghaving a thickness of at least5 µm.		
	Parts of coated or uncoated steel that are only intended to provide or to transmit contact pressure shall be adequately protected against rusting.		
	If the body of the earthing terminal is a part of a frame or enclosure of aluminium oraluminium alloy, precautions shall be taken to avoid the risk of corrosion resulting fromcontact between copper and aluminium or its alloys.		
27.5	The connection between the earthing terminal or earthing contact and earthed metalparts shall have low resistance		
	If the clearances of basic insulation in a protective extra-low voltage circuit are based onthe rated voltage of the appliance, this requirement does not apply to connections providing earthing continuity in the protective extra-low voltage circuit.		
	A current derived from a source having a no-load voltage not exceeding 12 V (a.c. or d.c.) andequal to 1.5 times rated current of the appliance or 25 A, whichever is higher, is passed between the earthing terminal or earthing contact and each of the accessible metal parts inturn.		

	The voltage drop between the earthing terminal of the appliance or the earthing contact of theAppliance inlet and the accessible metal part is measured. The resistance calculated fromthe current and this voltage drop shall not exceed 0.1 ohm.		
27.6	The printed conductors of printed circuit boards shall not be used to provide earthing continuity in hand-held appliances. They may be used to provide earthing continuity in other appliances if		
	a) at least two tracks are used with independent soldering points and the appliance complieswith 27.5 for each circuit,		
	b) the material of the printed circuit board complies with IS 5921 (Part 6) or IS 5921 (Part 7).		

*Total number of Requirements to be observed / inspected = 01
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 12
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name		
28	**Screws and connections**		
28.1	Fixings, the failure of which may impair compliance with this standard, electricalconnections and connections providing earthing continuity shall withstandthe mechanicalstresses occurring in normal use.		
	Screws used for these purposes shall not be of metal which is soft or liable to creep, such aszinc or aluminium. If they are ofinsulating material, they shall have a nominal diameter of atleast 3 mm and they shall not beused for any electricalconnections or connections providing earthing continuity.		
	Screws used for electrical connections or for connectionsproviding earthing continuity shallscrew into metal.		
	Screws shall not be of insulating material if their replacement by a metal screw could impairsupplementary insulation orreinforced insulation. Screws that may be removed whenreplacing a supply cord having a type X attachment or when undertaking user maintenance shall not be of insulating material if their replacement by a metal screw could impair basic insulation		
	Screws and nuts are tested if they are		
	a) used for electrical connections;		
	b) used for connections providing earthing continuity, unless at least two screws or nuts are used;		
	c) likely to be tightened		
	1) during user maintenance		
	2) when replacing a supply cord having a type X attachment		
	3) during installation.		

	The screws or nuts are tightened and loosened without jerking:		
	a)10 times for screws in engagement with a thread of insulating material		
	b)5 times for nuts and other screws.		
	Screws in engagement with a thread of insulating material are completely removed andreinserted each time.		
	When testing terminal screws and nuts, a cable or flexible cord ofthe largest cross-sectional area specified in table 13 is placed in the terminal. It isrepositioned before each tightening.		
	The test is carried out by means of a suitable screwdriver, spanner or key and by applying atorque as shown in table 14.		
	Column I is applicable for metal screws without heads if the screw does not protrude from the hole when tightened		
	Column II is applicable		
	a) for other metal screws and for nuts;		
	b) for screws of insulating material		
	1) having a hexagonal head with the dimension across flats exceeding the overall thread diameter		
	2) with a cylindrical head and a socket for a key, the socket having a cross-corner dimension exceeding the overall thread diameter;		
	3) with a head having a slot or cross-slots, the length of which exceeds 1.5 times theoverall thread diameter.		
28.2	Electrical connections and connections providing earthing continuity shall be constructed so that contact pressure is not transmitted through insulating material that is liable to shrink or to distort unless there is sufficient resiliency in the metallic parts tocompensate for any possible shrinkage or distortion of the insulating material.*		

	This requirement does not apply to electrical connections in circuits carrying a current not exceeding 0.5 A.*		
28.3	Space-threaded (sheet metal) screws shall only be used for electrical connections ifthey clamp the parts together.*		
	Thread-cutting (self-tapping) screws shall only be used for electrical connections if theygenerate a full form standard machine screw thread. Such screws shall not be used if they are likely to be operated by the user or installer unless the thread is formed by a swaging action.*		
	Thread-cutting and space-threaded screws may be used in connections providing earthing continuity provided it is unnecessary to disturb the connection in normal use and at least two screws are used for each connection		
28.4	Screws and nuts that make a mechanical connection between different parts of the appliance shall be secured against loosening if they also make electrical connections or connections providing earthing continuity. This requirement does not apply to screws in the earthing circuit if at least two screws are used for the connection or if an alternative earthing circuit is provided.		

*Total number of Requirements to be observed / inspected = 02
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 15
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

.....
(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
29	**Clearances, creepage distances and solid insulation**		
	Appliances shall be constructed so that the clearances, creepage distances and solidinsulation are adequate to withstand theelectrical stresses to which the appliance is liable tobe subjected		
	If coatings are used on printed circuit boards to protect the microenvironment (Type Acoating) or to provide basic insulation (Type B coating). Annex J applies. Themicroenvironment is pollution degree 1 under Type A coating. There are no creepage distance or clearance requirements under Type B coating		
29.1	Clearances shall not be less than the values specified in table 16, taking into accountthe rated impulse voltage for the overvoltage categories of table 15. However, they may besmaller for basic insulation and functional insulation if the clearance meets the impulsevoltage test of clause 14. This test is only applicable if theconstruction is such that there isno likelihood of the distances being affected by distortion, by wear, by movement of the partsor during assembly.Theclearances for rated impulse voltages of 1 500 V and above are increased by 0.5 mm and the impulse voltage test is not applicable		
	Examples of constructions in which distances are likely to be affected are those involvingsoldering, snap-on and screwterminals and clearances frommotor windings.		
	Appliances are in overvoltage category II.		

	Clearances less than those specified in table 16 are not allowed for basic insulation ofclass 0 appliances and class 01 appliances, or if pollution degree 3 is applicable.		
	Parts, such as hexagonal nuts that can be tightened to different positions during assembly,and movable parts, are placed in the most unfavourable position.		
	A force is applied to bare conductors, other than those of heating elements, and accessible surfaces to try to reduce clearances when making the measurement. The force is		
	a) 2 N, for bare conductors,		
	b) 30 N, for accessible surfaces		
	The force is applied by means of test probe B of IS 1401. Apertures are assumed to be covered by a piece of flat metal		
29.1.1	The clearances of basic insulation shall be sufficient to withstand the overvoltages likely to occur during use, taking into account the rated impulse voltage. The values oftable 16 are applicable.		
	The clearance at the terminals of tubular sheathed heating elements may be reduced to 1.0 mm if the microenvironment is pollution degree 1.		
	Lacquered conductors of windings are assumed to be bare conductors but the clearancesspecified in table 16 are reduced by 0.5 mm for rated impulse voltages of at least 1 500 V.		
29.1.2	Clearances of supplementary insulation shall be not less than those specified for basic insulation in table 16		
29.1.3	Clearances of reinforced insulation shall be not less than those specified for basicinsulation in table 16, but using the next higher step for rated impulse voltage as areference.		

29.1.4	For functional insulation, the values of table 16 are applicable. However, clearances are not specified if the appliance complies with clause 19 with the functional insulation short-circuited. Clearances at crossover points of lacquered conductors are not measured		
	The clearance between surfaces of PTC heating elements may be reduced to 1 mm		
29.1.5	For appliances having higher working voltages than rated voltage, for example on the secondary side ofa step-up transformer, or if there is a resonant voltage, the voltage used for determining clearances from Table 16 shall be the sum of the rated impulse voltage and the difference between the peak value of the working voltage and the peak value of the rated voltage		
	For circuits supplied with a voltage lower than rated voltage, for example on the secondaryside of a transformer, clearances of functional insulation are based on the working voltage, which is used as the rated voltage in table 15.		
29.2	Appliances shall be constructed so that creepage distances are not less than those appropriate for the working voltage, taking into account the material group and the pollution degree.		
	Pollution degree 2 applies unless		
	a) precautions have been taken to protect the insulation, in which case pollution degree 1applies;		
	b) the insulation is subjected to conductive pollution, in which case pollution degree 3applies.		
	Parts such as hexagonal nuts that can be tightened to different positions during assembly,and movable parts, are placed in the most unfavourable position.		

	A force is applied to bare conductors, other than those of heating elements, and accessible surfaces to try to reduce creepage distances when making the measurement. The force is		
	a) 2 N, for bare conductors;		
	b) 30 N, for accessible surfaces		
	The force is applied by means of test probe B of IS 1401		
	The relationship between the material group and the comparative tracking index (CT1) values, as given in 2.7.1.3 of IS 15382 (Part 1), is as follows		
	material group I: 600 ≤CTI;		
	material group II: 400 ≤CTI < 600		
	material group IIIa: 175 ≤CTI < 400		
	material group IIIb: 100 ≤CTI < 175		
	These CTI values are obtained in accordance with IEC 60112 using solution A. If the CTI value of the material is unknown, a proof tracking index (PTI) test in accordance with annex Nis carried out at the CTI values specified, in order to establish the material group		
29.2.1	Creepage distances of basic insulation shall not be less than those specified in table 17.		
	Except for pollution degree 1, if the test of clause 14 has been used to check a particularclearance, the corresponding creepage distance shall not be less than the minimumdimension specified for the clearance of table 16		
29.2.2	Creepage distances ofsupplementary insulation shall be at least those specifiedfor basic insulation in table 17.		
29.2.3	Creepage distances of reinforced insulation shall be at least double those specified for basic insulation in table 17.		

29.2.4	Creepage distances of functional insulation shall be not less than those specified in table 18. However, creepage distances may be reduced if the appliance complies with clause 19 with the functional insulation short-circuited		
29.3	Supplementary insulation and reinforced insulation shall have adequate thickness, or have a sufficient number of layers, to withstand the electrical stresses that can be expected during the use of the appliance.		
	a)measurement, in accordance with 29.3.1, or by		
	b)an electric strength test in accordance with 29,3.2, if the insulation consists of more than one separate layer, other than natural mica or similar flakey material, or by		
	c)an assessment of the thermal quality of the material combined with an electric strength test, in accordance with 29.3.3.		
29.3.1	The thickness of the insulation shall be at least		
	a) 1 mm for supplementary insulation; and		
	b)2 mm for reinforced insulation		
29.3.2	Each layer of material shall withstand the electric strength test of 16.3 for supplementary insulation. Supplementary insulation shall consist of at least 2 layers of material and reinforced insulation of at least 3 layers		
29.3.3	The insulation is subjected to the dry heat test Bb of IS 9000 (Part 3/Sec 1) for 48 h at a temperature of 50 K in excess of the maximum temperature rise measured during the test of 19. At the end of the period, the insulation is subjected to the electric strength test of 16.3 at the conditioning temperature and also after it has cooled down to room temperature		

	If the temperature rise of the insulation measured during the tests of 19 does not exceed the value specified in Table 3, the test of IS 9000 (Part 3/Sec 1) is not carried out.		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted =36
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be not passing in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
30	**Resistance to heat and fire**		
30.1	External parts of non-metallic material, parts of insulating material supporting liveparts including connections, and parts of thermoplastic material providing supplementaryinsulation or reinforced insulation, shall be sufficiently resistant to heat if their deterioration could cause the appliance to fail to comply with this standard		
	This requirement does not apply to the insulation or sheath of flexible cords or internal wiring.		
	The test is carried out at a temperature of 40 °C ± 2 °C plus the maximum temperature risedetermined during the test of clause 11, but it shall be at least		
	a)75 °C ± 2 °C, for external parts;		
	b) 125 °C ± 2 °C, for parts supporting live parts.		
	However, for parts of thermoplastic material providing supplementary insulation orreinforced insulation, the test is carried out at a temperature of 25 °C ± 2 °C plus themaximum temperature rise determined during the tests of clause 19, if this is higher. Thetemperature rises of 19.4 are not taken into account provided that the test is terminated bythe operation of a non-self-resetting protective device and it is necessary toremove acover or use a tool to reset it.		
30.2	Parts of non-metallic material shall be resistant to ignition and spread of fire.		

	This requirement does not apply to decorative trims, knobs and other parts unlikely to beignited or to propagate flames that originate inside the appliance.		
	Compliance is checked by the test of 30.2.1. In addition		
	a)for attended appliances, 30.2.2 is applicable		
	b) for unattended appliances, 30.2.3 is applicable		
	For the base material of printed circuit boards, compliance is checked by the test of 30.2.4		
	The tests are carried out on parts of non-metallic material that have been removed from theappliance. When the glow-wire test is carried out, they are placed in the same orientation asthey would be in normal use		
	For appliances that allow a pre – selected start time and those with a keep – warm functions, 30.2.3 is applicable. For other appliances, 30.2.2 is applicable.		
30.2.1	Parts of non-metallic material are subjected to the glow-wire test of IS 11000 (Part 2/Sec 1), which is carried out at 550 ^{0}C.		
	The glow-wire test is not carried out on parts of material classified at least HB40, provided that the test sample was no thicker than the relevant part.		
	Parts for which the glow-wire test cannot be carried out, such as those made of soft or foamy material, shall meet the requirements specified in IS 11239 (Part 12) for category HBF material, the test sample being no thicker than the relevant part		
30.2.3	Appliances that are operated while unattended are tested as specified in 30.2.3.1 and 30.2.3.2. However, the tests are not applicable to:		
	a)parts supporting welded connections		
	b)parts supporting connections in low-power circuits described in 19.11.1;		

	c)soldered connections on printed circuit boards		
	d)connections on smallcomponents that are mounted on printed circuit boards; and		
	e) partswithin 3 mm of any of these connections.		
30.2.3.1	Parts of insulating material supporting connections that carry a current exceeding 0.2 A during normal operation, and parts of insulating material within a distance of 3 mm ofsuch connections, shall have a glow-wire flammability index of at least 850 °C, the test sample being no thicker than the relevant part.		
30.2.3.2	Parts of insulating material supporting current-carrying connections, and parts ofinsulating material within a distance of 3 mm of such connections, are subjected to the glow wire test of IS 11000 (Part 2 / Sec 1). However, the glow-wire test is not carried out on parts ofmaterial classified as having a glow-wire ignition temperature ofat least		
	a)775 °C, for connections which carry a current exceeding 0,2 A during normal operation		
	b)675 °C, for other connections,		
	c)provided that the test sample was no thicker than the relevant part		
	When the glow-wire test of IS 11000 (Part 2 / Sec 1) is carried out, the temperatures are		
	a)750 °C, for connections which carry a current exceeding 0.2 A during normal operation;		
	b)650 °C, for other connections.		

	If parts withstand the glow-wire test of IS 11000 (Part 2/Sec I), but during the test, produce a flame that persists for longer than 2 s,then these parts and adjacent parts are further tested as follows. Parts above the connection within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm are subjected to the needle-flame test of Annex E. However, parts shielded by a barrier that meets the needle-flame test of Annex E are not tested		
	The needle-flame test is not carried out on parts of material classified as V-0 or V-l, provided that the test sample was no thicker than the relevant part		
30.2.4	The base material of printed circuit boards is subjected to the needle-flame test of Annex E. The flame is applied to the edge of the board where the heat sink effect is lowest when the board is positioned as in normal use		
	The lest is not carried out:		
	1)on printed circuit boards of low-power circuits described in 19.11.1;		
	2)a metal enclosure that confines flames or burning droplets;		
	3)hand-held appliances;		
	4)appliances that have to be kept switched on by hand or foot;		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =
Total number of tests to be conducted =22
Total No. of Applicable Tests =
No. of testsfor which the sample passed =
Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.
.....
(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
31	**Resistance to rusting**		
	Ferrous parts, the rusting of which might cause the appliance to fail to comply with this standard, shall be adequately protected against rusting		
	All grease is removed from the parts to be tested by immersion in carbon tetra chloride or trichloroethane for 10min. The parts are then immersed for 10min in a 10 percent solution of ammonium chloride in water at a temperature between 15°C and 35°C. Without drying but after shaking off any drops, the parts are placed for 10 min in a box containing air having not less than 90 percent relative humidity and temperature between 15°C and 35°C. After the parts have been dried for 10 min in a heating cabinet at a temperature of 100±5°C, their surfaces shall show no signs of rust. Traces of rust on sharp edges and any yellowish film removable by rubbing are ignored.		
	For small helical springs and the like, and for parts exposed to abrasion, a layer of grease may provide sufficient protection against rusting. Such parts are only subjected to the test if there is doubt about the effectiveness of the grease film, and the test is then made without previous removal of the grease.		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 03
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the

requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
32	**Radiation, toxicity and similar hazards**		
	Appliances shall not emit harmful radiation or present a toxic or similar hazard		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 02
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
A	ANNEX A ROUTINE TESTS		
	Description of routine tests to be carried out by the manufacturer		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 02
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be not passing in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
B	ANNEX B (NORMATIVE) APPLIANCES POWERED BY RECHARGEABLE BATTERIES		
	The following modifications to this standard are applicable for appliances powered by batteries that are recharged in the appliance.*		
	This annex does not apply to battery chargers.*		
3.1.9	Appliance operated under the following conditions:		
	-the appliance, supplied by its fully charged battery, operated as specified in relevant part 2		
	-the battery is charged, the battery being initially discharged to such an extent that the appliance cannot operate		
	-if possible, the appliance is supplied from the supply mains through its battery charger, the battery being initially discharged to such an extent that the appliance cannot operate. The appliance is operated as specified in relevant part 2		
	If the appliance incorporates inductive coupling between two parts that are detachable from each other, the appliance is supplied from the supply mains with the detachable part removed		
3.6.2	Part to be removed in order to discard the battery is not considered to be detachable		
5.101	Appliances supplied from the supply mains tested as specified for motor-operated appliances		
7.1	Battery compartment for batteries intended to be replaced by the user, marked with battery voltage and polarity of the terminals.*		
7.12	The instructions for appliances incorporating batteries intended to be replaced by the user includes required information.*		

	Details about how to remove batteries containing materials hazardous to the environment given.*		
7.15	Markings placed on the part of the appliance connected to the supply mains		
8.2	Appliances having batteries that according to the instruction may be replaced by the user need only have basic insulation between live parts and the inner surface of the battery compartment.*		
	If the appliance can be operated without batteries, double or reinforced insulation required.*		
11.7	The battery is charged for the period described		
19.1	Appliances subjected to tests of 19.101, 19.102 and 19.103		
19.101	Appliances supplied at rated voltage for 168 h, the battery being continually charged		
19.102	Short-circuiting of the terminals of the battery, being fully charged, for appliances having batteries that can be removed without the aid of a tool		
19.103	Appliances having batteries replaceable by the user supplied at rated voltage under normal operation with the battery removed or in any position allowed by the construction		
21.101	Appliances having pins for insertion into socket-outlets have adequate mechanical strength, checked according to procedure 2 of IS 9000 (Part 7/ Sec 4)		
	a) 100, the mass of part does not exceed 250 g		
	b) 50, the mass of part exceeds 250 g		
	After the test, the requirements of 8.1, 15.1.1, 16.3 and clause 29 shall be met		

22.3	Appliances having pins for insertion into socket-outlets tested as fully assembled as possible		
25.13	An additional lining or bushing not required for interconnection cords operating at safety extra-low voltage		
30.2	For parts of the appliance connected to the supply mains during the charging period, 30.2.3 applies		
	For other parts, 30.2.2 applies		

*Total number of Requirements to be observed / inspected = 08
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 19
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
C	ANNEX C AGEING TEST ON MOTORS		
	Tests, as described, carried out when doubt with regard to the temperature classification of the insulation of a motor winding		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 02
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
D	ANNEX D THERMAL MOTOR PROTECTORS		
	Applicable to appliances having motors that incorporate thermal motor protectors		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 02
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
E	ANNEX E NEEDLE-FLAME TEST		
	Needle-flame test carried out in accordance with IS 11000 (Part 2 / Sec 2), with the following modifications:		
7	Severities		
	The duration of application of the test flame is 30 s ± 1 s		
8	Test procedure		
8.2	The specimen is arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1		
8.4	The first paragraph does not apply		
	If possible, the flame is applied at least 10 mm from a corner		
8.5	The test is carried out on one specimen		
	If the specimen does not withstand the test, the test may be repeated on two additional specimens, both withstanding the test		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 08
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
F	ANNEX F CAPACITORS		
	Capacitors likely to be permanently subjected to the supply voltage, and used for radio interference suppression or voltage dividing, comply with the following clauses of IEC 60384-14, with the following modifications:		
1.5	Terminology		
1.5.3	Class X capacitors tested according to subclass X2		
1.5.4	This subclause is applicable		
1.6	Marking*		
	Items a) and b) are applicable		
3.4	Approval testing		
3.4.3.2	Table II is applicable as described		
4.1	Visual examination and check of dimensions		
	This subclause is applicable		
4.2.1	This subclause is applicable		
4.2.5	This subclause is applicable		
4.2.5.2	Only table IX is applicable		
	Values for test A apply		
	However, for capacitors in heating appliances the values for test B or C apply		
4.12	Damp heat, steady state		
	This subclause is applicable		
	Only insulation resistance and voltage proof are checked		
4.13	Impulse voltage		
	This subclause is applicable		
4.14	Endurance		

	Sub-clauses 4.14.1, 4.14.3, 4.14.4 and 4.14.7 applicable		
4.14.7	Only insulation resistance and voltage proof are checked		
	Visual examination, no visible damage		
4.17	Passive flammability test		
	This subclause is applicable		
4.18	Active flammability test		
	This subclause is applicable		

*Total number of Requirements to be observed / inspected = 01
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 14
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
G	ANNEX G SAFETY ISOLATING TRANSFORMERS		
	The following modifications to this standard are applicable for safety isolating transformers:		
7	Marking and instructions *		
7.1	Transformers for specific use marked with:		
	a) name, trademark or identification mark of the manufacturer or responsible vendor *		
	b) model or type reference *		
17	Overload protection of transformers and associated circuits		
	Fail-safe transformers comply with subclause 15.5 of IS/IEC 61558-1		
22	Construction		
	19.1 and 19.1.2 of IS/IEC 61558-2-6 are applicable		
29	Clearances, creepage distances and solid insulation		
29.1, 29.2 and 29.3	The distances specified in items 2a, 2c and 3 in table 13 of IS/IEC 61558-1 apply		

*Total number of Requirements to be observed / inspected = 03
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 07
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
H	ANNEX H (NORMATIVE) SWITCHES		
	Switches comply with the following clauses of IEC 61058-1, as modified:		
	The tests of IEC 61058-1 carried out under the conditions occurring in the appliance		
	Before being tested, switches are operated 20 times without load		
8	Marking and documentation*		
	Switches are not required to be marked *		
	However, switches that can be tested separately from the appliance marked with the manufacturer’s name or trade mark and the type reference*		
13	Mechanism		
	The tests may be carried out on a separate sample		
15	Insulation resistance and dielectric strength		
15.1	Not applicable		
15.2	Not applicable		
15.3	Applicable for full disconnection and micro-disconnection		
17	Endurance		
	Compliance is checked on three separate appliances or switches		
	For 17.2.4.4, the number of cycles is 10 000, unless otherwise specified in 24.1.3 of the relevant part 2 of this standard		

	Switches for operation under no load and which can be operated only by a tool and switches operated by hand that are interlocked so that they cannot be operated under load. However, switches without this interlock are subjected to the test of 17.2.4.4 for 100 cycles of operation.		
	17.2.2 and 17.2.5.2 not applicable. The ambient temperature during the test is that occurring in the appliance during the test of Clause 11, as specified in footnote2 of Table 3.		
	Temperature rise of the terminals shall not be increased by more than 30 K above the temperature rise measured in 11.		
20	Clearances, creepage distances, solid insulation and coatings of rigid printed board assemblies		
	This clause is applicable to clearances and creepage distances for functional insulation, across full disconnection and micro-disconnection, as stated in table 24		

*Total number of Requirements to be observed / inspected = 03
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 13
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
I	ANNEX I MOTORS HAVING BASIC INSULATION THAT IS INADEQUATE FOR THE RATED VOLTAGE OF THE APPLIANCE		
	The following modifications to this standard are applicable for motors having basic insulation that isinadequate for the rated voltage of the appliance:		
8	Protection against access to live parts		
8.1	Metal parts of the motor are considered to be bare live parts		
11	Heating		
11.3	Temperature rise of the body of the motor is determined instead of the temperature rise of the windings		
11.8	Temperature rise of the body of the motor, where in contact with insulating material, not exceeding values in table 3 for the relevant insulating material		
16	Leakage current and electric strength		
16.3	Insulation between live parts of the motor and its other metal parts not subjected to the test		
19	Abnormal operation		
19.1	The tests of 19.7 to 19.9 not carried out.		
	Appliances are also subjected to test of 19.101		
19.101	Appliance operated at rated voltage with each of the following fault conditions:		
	a) short circuit of the terminals of the motor, including any capacitor incorporated in the motor circuit		
	b) short circuit of each diode of the rectifier		

	c) open circuit of the supply to the motor		
	d) open circuit of any parallel resistor, the motor being in operation		
	Only one fault simulated at a time, the tests carried out consecutively		
22	Construction		
22.101	For class I appliances incorporating a motor supplied by a rectifier circuit, the d.c. circuit being insulated from accessible parts of the appliance by double or reinforced insulation		
	Compliance checked by the tests specified for double and reinforced insulation		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted =14
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
J	ANNEX J COATED PRINTED CIRCUIT BOARDS		
	Testing of protective coatings of printed circuit boards carried out in accordance with IS 15382 (Part 3) with the following modifications:		
6.6	Climatic Sequence		
	When production samples are used, three samples of the printed circuit board are tested		
6.6.1	Cold		
	The test is carried out at -25°C		
6.6.3	Rapid change of temperature		
	Severity 1 is specified		
6.8.6	Partial Discharge Extinction Voltage		
	Type A coatings are not subjected to a partial discharge test.		
6.9	Additional tests		
	This sub-clause is not applicable		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 08
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
K	ANNEX K OVERVOLTAGE CATEGORIES		
	The information on overvoltage categories is extracted from IS 15382 (Part 1)		
	Overvoltage category is a numeral defining a transient overvoltage condition		
	Equipment of overvoltage category IV is for use at the origin of the installation		
	Equipment of overvoltage category III is equipment in fixed installations and for cases where the reliability and the availability of the equipment is subject to special requirements		
	Equipment of overvoltage category II is energy consuming equipment to be supplied from the fixed installation		
	If such equipment is subjected to special requirements with regard to reliability and availability, overvoltage category III applies		
	Equipment of overvoltage category I is equipment for connection to circuits in which measures aretaken to limit transient overvoltages to an appropriate low level		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 08
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
L	ANNEX L GUIDANCE FOR THE MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES		
	Sequences for the determination of clearances and creepage distances		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 02
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be not passing in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
M	ANNEX M POLLUTION DEGREE		
	The information on pollution degrees is extracted from IS 15382 (Part 1)		
	Pollution		
	The microenvironment determines the effect of pollution on the insulation, taking into account the microenvironment		
	Means may be provided to reduce pollution at the insulation by effective enclosures or similar		
	Minimum clearances specified where pollution may be present in the microenvironment		
	Degrees of pollution in the microenvironment		
	For evaluating creepage distances, the following degrees of pollution in the microenvironment are established:		
	a)pollution degree 1: no pollution or only dry, non-conductive pollution occurs. The pollution has no influence		
	b) pollution degree 2: only non-conductive pollution occurs, except that occasionally a temporary conductivity caused by condensation is to be expected		
	c) pollution degree 3: conductive pollution occurs or dry non-conductive pollution occurs that becomes conductive due to condensation that is to be expected		
	d) pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted =12
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
N	ANNEX N PROOF TRACKING TEST		
	The proof tracking test is carried out in accordance with IS 2824 with the following modifications:		
7	Test apparatus		
7.3	Test solutions		
	Test solution A is used		
10	Determination of proof tracking index (PTI)		
10.1	Procedure		
	The proof voltage is 100V, 250V, 175V, 400V or 600V as appropriate		
	The last paragraph of Clause 3 applies		
	The test is carried out on five specimens		
	In case of doubt, additional test with proof voltage reduced by 25V, the number of drops increased to 100		
10.2	Report		
	The report stating if the PTI value was based on a test using 100 drops with a test voltage of (PTI-25) V		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted =13
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
O	ANNEX O SELECTION AND SEQUENCE OF THE TESTS OF CLAUSE 30		
	Description of tests for determination of resistance to heat and fire		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 02
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
P	ANNEX P GUIDANCE FOR THE APPLICATION OF THIS STANDARD TO APPLIANCES USED IN WARM DAMP EQUABLE CLIMATES		
	Modifications applicable for class 0 and 01 appliances having a rated voltage exceeding 150V, intended to be used in countries having a warm damp equable climate and that are marked WDaE		
	Modifications may also be applied to class 1 appliances having a rated voltage exceeding 150V, intended to be used in countries having a warm damp equable climate and that are marked WDaE, if liable to be connected to a supply mains that excludes the protectiveearthing conductor		
5	General conditions for the tests		
5.7	The ambient temperature for the tests of Clauses 11 and 13 is 40 +3/0°C		
7	Marking and instructions		
7.1	The appliance marked with the letters WDaE*		
7.12	The instructions state that the appliance is to be supplied through a RCD having a rated residual operating current not exceeding 30 mA*		
	The instructions state that the appliance is considered to be suitable for use in countries having a warm damp equable climate, but may also be used in other countries*		
11	Heating		
11.8	The values of Table 3 are reduced by 15 K		

13	Leakage current and electric strength at operating temperature		
13.2	The leakage current for class I appliances not exceeding 0,5 mA		
15	Moisture resistance		
15.3	The value of t is 37 °C		
16	Leakage current and electric strength		
16.2	The leakage current for class I appliances not exceeding 0.5 mA		
19	Abnormal operation		
19.13	The leakage current test of 16.2 is applied in addition to the electric strength test of 16.3		

*Total number of Requirements to be observed / inspected = 03
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted =09
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
Q	ANNEX Q (INFORMATIVE) SEQUENCE OF TESTS FOR THE EVALUATION OF ELECTRONIC CIRCUITS		
	Description of tests for appliances incorporating electronic circuits		

*Total number of Requirements to be observed / inspected = 00
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 02
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the Requirement tested.

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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
R	ANNEX R (NORMATIVE) SOFTWARE EVALUATION		
	Software evaluated in accordance with the following clauses of Annex H of IEC 60730-1, as modified		
H.2	Definitions		
	Only definitions H.2.16 to H.2.20 applicable		
H.7	Information		
	Only footnotes 12) to 18) of Table 7.2, as modified, applicable		
H.11.12	Controls using software		
	All the subclauses of H.11.12, as modified, except H.11.12.6 and H.11.12.6.1, applicable		
H.11.12.7	Delete text		
H.11.12.7.1	For appliances using software class C having a single channel with self-test and monitoring structure, the manufacturer provides the measures necessary to address the fault/errors in safety related segments and data		
H.11.12.8	Software fault/error detection occurs before compliance with 19.13 of IEC 60335-1 is impaired		
H.11.12.8.1	Replace text		
H.11.12.13	Software and safety related hardware under its control initializes and terminates before compliance with 19.13 of IEC 60335-1 is impaired		

*Total number of Requirements to be observed / inspected = 13
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 00
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.
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(Approving Authority)

Clause No.	Test / Requirement name	Test result/ observation	Verdict
S	ANNEX S (NORMATIVE) BALL PRESSURE TEST		
S-1	TEST APPARATUS , consists essentially of the elements listed below		
S-1.1	Loading Device		
	With the test specimen at the specified temperature, downward force is applied through a steel ball by means of a loading device (see Fig. 13). The apparatus is so designed as to achieve a downward force equivalent to a 20N ± 0.2N load including the mass of the pressure ball.		
S-1.2	Test Specimen support		
	The test specimen support shall be such that if rigidly supports the test specimen in a horizontal position, has sufficient strength to support the loading device, has a smooth flat surface, has sufficiently large mass to prevent a significant reduction in temperature of the test apparatus during the installation and removal of the test specimen from the heating oven,		
	A solid steel cylinder with a flat smooth mounting surface 50 mm in diameter and 100 mm in height has been found adequate for the test specimen support.		

	It has been found useful to mount a separate thermocouple in the centre of the test specimen support approximately 3 mm below the surface to check that the temperature of the test specimen support does not significantly deviate from the test temperature.		
S-1.3	Heating Oven		
	The heating Oven for conditioning of the sample shall be a single chamber type with adequate air temperature distribution		
S-1.4	Optical Measuring Instrument		
	The measuring instrument shall have an optical magnification between 10 X and 20 X and shall incorporate a calibrated reticule or cross-travel measuring table. A lighting device can be used to illuminate the surface where the pressure ball was applied.		
S-2	TEST SPECIMENS		
	Cut a test specimen from the product in such a way that a piece at least 2.5 mm thick with approximately parallel upper and lower surfaces is obtained. If necessary, the thickness may be attained by stacking two or more sections. If it is not possible to cut a test specimen with parallel surfaces, care shall be taken to support the area of the test specimen directly under the pressure ball. The test specimen shall be a square with a minimum of 10 mm sides or a circle with a diameter of at least 10 mm.		
	The plaque shall have a thickness of 3.0 ± 0.5 mm and shall be at least a square with 10 mm sides or a circle with a diameter of at least 10mm.		
S-3	CONDITIONING		

	The test specimen is stored for at least 24 h in an atmosphere having a temperature between 15° C and 35° C and a relative humidity between 45 percent and 75 percent before the test.		
S-4	TEST PROCEDURE		
S-4.1	Conduct the test in air, in a heating oven (see S-1.3) at the temperature specified in 30.1. The heating oven, test specimen support and loading device shall be maintained at the test temperature for 24 h or until thermal equilibrium is reached, whichever occurs sooner. When thermal equilibrium conditions are reached , place the test specimen on the approximate centre of the test specimen support so that its upper surface is horizontal. Gently lower the pressure ball on to the approximate centre of the test specimen. Ensure that no conditions exist that will cause the pressure ball to move other than in a downward direction during the test.		
	The installation of the test specimen shall be performed in as short a time as practicable to ensure that there is no significant temperature drop of the heating oven and test specimen support.		
	Following a period of 60 ±20min, remove the pressure ball from the test specimen and within 10 s immerse the test specimen in water maintained at 20 ±5° C		
	Following an immersion period of 6 ±2 min remove the test specimen from the water and eliminate all traces of water.		
S-4.2	Within 3 min of removal from the water measure dimension d as shown in Fig. S-1, to one decimal place using the optical measuring instrument described in S-1.4. Dimension d is the greatest dimension across the indentation caused by the pressure ball.		

	The spherical portion of the indentation left by the pressure ball(dimension d) shall exclude any material deformation as shown in Fig. S-1 D. In acse of doubt, make two further tests on two other test specimens both of which shall meet the requirement of S-6.		
S-5	OBSERVATIONS AND MEASUREMENTS		
	The following shall be observed during the test and recorded:		
	Origin of the test specimen*		
	Material type or component/part description*		
	Thickness of the test specimens (and quantity of any stacked test specimens)		
	Location on the test specimen where the test(s) were carried out		
	Details of conditioning		
	Temperature of the test; and		
	Value of dimension d		
S-6	Expression of test results*		

*Total number of Requirements to be observed / inspected = 02
Total No. of Applicable Requirement =
No of Requirements for which the sample passed =

Total number of tests to be conducted = 22
Total No. of Applicable Tests =
No. of tests for which the sample passed =

Certificate: It is certified that the above tests were performed and found to be Passed/Failed in the requirement tested.

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(Approving Authority)

10	Power input and Current					
Condition	Supply (V)	Frequency (Hz)	P measured (W)	P rated (W)	Limit (W)	Remark
Supplementary information:						

10.2	TABLE: Current deviation				
Current deviation of/at:	I rated (A)	I measured (A)	dI	Required dI	Remark

11.8	TABLE: Heating test, thermocouples		
	Test voltage (V) ..... :		
	Ambient (°C) ..... :		
Thermocouple locations	dT (K)	Max. dT (K)	
Supplementary information:			

11.8	TABLE: Heating test, resistance method					
	Test voltage (V) .....:					
	Ambient, t_1 (°C) .....:					
	Ambient, t_2 (°C) .....:					
Temperature rise of winding	R_1 (Ω)	R_2 (Ω)	dT (K)	Max. dT (K)	Insulation class	
Note:						

13.2	TABLE: Leakage current		
	Heating appliances: 1.15 x rated input.....:	--	
	Motor-operated and combined appliances: 1.06 x rated voltage.....:	--	

Leakage current between	I (mA)	Max. allowed I (mA)
Live to earth		
Neutral to earth		

13.3	TABLE: Electric strength		

Test voltage applied between:	Voltage (V)	Breakdown (Yes/No)
Live to earth		
Neutral to earth		

16.2	TABLE: Leakage current		
	Single phase appliances: 1.06 x rated voltage .....:		
	Three phase appliances 1.06 x rated voltage divided by √3: .....:		

Leakage current I between	I (mA)	Max. allowed I (mA)
Live to earth		
Neutral to earth		

16.3	TABLE: Electric strength		

Test voltage applied between:	Voltage (V)	Breakdown (Yes/No)
Live to earth		
Neutral to earth		

16.4	TABLE: insulation resistance measurements		

insulation resistance R between:	R (GΩ)	required R (MΩ)
After spillage test as per clause 15.3 of IS302-2-26: 2014		
Supplementary information: This test is performed as per IS302-2-26: 2014 requirement		

17	TABLE: Overload protection, temperature rise		
Temperature rise of part/at:		dT (K)	Max. dT (K)
High frequency of part/at:			
Insulation of conductors			

19.1	TABLE: fault condition tests							
	Ambient temperature (°C) .....:							
No.	component No.	fault	test voltage (V)	test time	fuse No.	fuse current (A)	result	

19.7	TABLE: Abnormal operation, locked rotor/moving parts					
	Test voltage (V) :					
	Ambient, t1 (°C) :					
	Ambient, t2 (°C) :					
Temperature of winding		R1 (Ω)	R2 (Ω)	dT (K)	T (°C)	Max. T (°C)
Note:						

19.9	TABLE: Abnormal operation, running overload					
	Test voltage (V) :					
	Ambient, t1 (°C) :					
	Ambient, t2 (°C) :					
Temperature of winding		R1 (Ω)	R2 (Ω)	dT (K)	T (°C)	Max. T (°C)

19.13	TABLE: Abnormal operation, temperature rises	

Thermocouple locations	dT (K)	Max. dT (K)

28.1	TABLE: Threaded part torque test		
Threaded part identification	Diameter of thread (mm)	Column number (I, II, or III)	Applied torque (Nm)

29.1	TABLE: Clearances	
	Overvoltage category :	II

		Type of insulation:				
Rated impulse voltage (V):	Min. cl (mm)	Basic	Functional	Supplementary	Reinforced	Verdict / Remark
330	0,5*	--	--	--	--	
500	0,5*	--	--	--	--	
800	0,5*	--	--	--	--	
1 500	0,5*/**	--	--	--	--	
2 500	1,5**	--	--	--	--	
4 000	3,0**	--	--	--	--	
6 000	5,5**	--	--	--	--	
8 000	8,0**	--	--	--	--	
10 000	11,0**	--	--	--	--	

*) The value is increased to 0,8mm for pollution degree 3
*) If the construction is affected by wear, distortion, movement of the parts or during assembly, the value is increased by 0,5 mm

29.2	TABLE: Creepage distances, basic, supplementary and reinforced insulation										
Working voltage (V)	Creepage distance (mm) Pollution degree										
	1	2			3			Type of insulation			
		Material group			Material group						
		I	II	IIIa/IIIb	I	II	IIIa/IIIb	B*)	S*)	R*)	Verdict
≤50	0,2	0,6	0,9	1,2	1,5	1,7	1,9	--	--	--	
≤50	0,2	0,6	0,9	1,2	1,5	1,7	1,9	--	--	--	
≤50	0,4	1,2	1,8	2,4	3,0	3,4	3,8	--	--	--	
>50 and ≤125	0,3	0,8	1,1	1,5	1,9	2,1	2,4	--	--	--	
>50 and ≤125	0,3	0,8	1,1	1,5	1,9	2,1	2,4	--	--	--	
>50 and ≤125	0,6	1,6	2,2	3,0	3,8	4,2	4,8	--	--	--	
>125 and ≤250	0,6	1,3	1,8	2,5	3,2	3,6	4,0	--	--	--	
>125 and ≤250	0,6	1,3	1,8	2,5	3,2	3,6	4,0	--	--	--	
>125 and ≤250	1,2	2,6	3,6	5,0	6,4	7,2	8,0	--	--	--	
>250 and ≤400	1,0	2,0	2,8	4,0	5,0	5,6	6,3	--	--	--	
>250 and ≤400	1,0	2,0	2,8	4,0	5,0	5,6	6,3	--	--	--	
>250 and ≤400	2,0	4,0	5,6	8,0	10,0	11,2	12,6	--	--	--	
>400 and ≤500	1,3	2,5	3,6	5,0	6,3	7,1	8,0	--	--	--	
>400 and ≤500	1,3	2,5	3,6	5,0	6,3	7,1	8,0	--	--	--	
>400 and ≤500	2,6	5,0	7,2	10,0	12,6	14,2	16,0	--	--	--	
>500 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	--	--	--	
>500 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	--	--	--	
>500 and ≤800	3,6	6,4	9,0	12,6	16,0	18,0	20,0	--	--	--	
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	--	--	--	
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	--	--	--	
>800 and ≤1000	4,8	8,0	11,2	16,0	20,0	22,0	25,0	--	--	--	
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	--	--	--	
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	--	--	--	
>1000 and ≤1250	6,4	10,0	14,2	20,0	25,0	28,0	32,0	--	--	--	
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	--	--	--	
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	--	--	--	
>1250 and ≤1600	8,4	12,6	18,0	25,0	32,0	36,0	40,0	--	--	--	

>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	--	--	--	
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	--	--	--	
>1600 and ≤2000	11,2	16,0	22,0	32,0	40,0	44,0	50,0	--	--	--	
>2000 and ≤2500	7,5	10,0	14,0	20,0	25, 0	28,0	32,0	--	--	--	
>2000 and ≤2500	7,5	10,0	14,0	20,0	25, 0	28,0	32,0	--	--	--	
>2000 and ≤2500	15,0	20,0	28,0	40,0	50,0	56,0	64,0	--	--	--	
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	--	--	--	
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	--	--	--	
>2500 and ≤3200	20,0	25,0	36,0	50,0	64,0	72,0	80,0	--	--	--	
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	--	--	--	
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	--	--	--	
>3200 and ≤4000	25,0	32,0	44,0	64,0	80,0	90,0	100,0	--	--	--	
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	--	--	--	
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	--	--	--	
>4000 and ≤5000	32,0	40,0	56,0	80,0	100,0	112,0	126,0	--	--	--	
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	--	--	--	
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	--	--	--	
>5000 and ≤6300	40,0	50,0	72,0	100,0	126,0	142,0	160,0	--	--	--	
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	--	--	--	
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	--	--	--	
>6300 and ≤8000	50,0	64,0	90,0	126,0	160,0	180,0	200,0	--	--	--	
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	--	--	--	
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	--	--	--	
>8000 and ≤10000	64,0	80,0	112,0	160,0	200,0	220,0	250,0	--	--	--	
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	--	--	--	
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	--	--	--	
>10000 and ≤12500	80,0	100,0	142,0	200,0	250,0	280,0	320,0	--	--	--	
*), B=Basic, S=Supplementary and R=Reinforced											

29.2	TABLE: Creepage distances, functional insulation							
Working voltage (V)	Creepage distance (mm) Pollution degree							
	1	2			3			
		Material group			Material group			
		I	II	IIIa/IIIb	I	II	IIIa/III	Verdict / Remark

≤50	0,2	0,6	0,8	1,1	1,4	1,6	1,8	
>50 and ≤125	0,3	0,7	1,0	1,4	1,8	2,0	2,2	
>125 and ≤250	0,4	1,0	1,4	2,0	2,5	2,8	3,2	
>250 and ≤400	0,8	1,6	2,2	3,2	4,0	4,5	5,0	
>400 and ≤500	1,0	2,0	2,8	4,0	5,0	5,6	6,3	
>500 and ≤800	1,8	3,2	4,5	6,3	8,0	9,0	10,0	
>800 and ≤1000	2,4	4,0	5,6	8,0	10,0	11,0	12,5	
>1000 and ≤1250	3,2	5,0	7,1	10,0	12,5	14,0	16,0	
>1250 and ≤1600	4,2	6,3	9,0	12,5	16,0	18,0	20,0	
>1600 and ≤2000	5,6	8,0	11,0	16,0	20,0	22,0	25,0	
>2000 and ≤2500	7,5	10,0	14,0	20,0	25,0	28,0	32,0	
>2500 and ≤3200	10,0	12,5	18,0	25,0	32,0	36,0	40,0	
>3200 and ≤4000	12,5	16,0	22,0	32,0	40,0	45,0	50,0	
>4000 and ≤5000	16,0	20,0	28,0	40,0	50,0	56,0	63,0	
>5000 and ≤6300	20,0	25,0	36,0	50,0	63,0	71,0	80,0	
>6300 and ≤8000	25,0	32,0	45,0	63,0	80,0	90,0	100,0	
>8000 and ≤10000	32,0	40,0	56,0	80,0	100,0	110,0	125,0	
>10000 and ≤12500	40,0	50,0	71,0	100,0	125,0	140,0	160,0	

30.1	TABLE: Ball pressure		
Part	Test temperature (°C)	Impression diameter (mm)	Allowed impression diameter (mm)

30.2	TABLE: glow-wire tests		N/A
Part / at:	Test temperature (°C)	Flame in the first 30 s Yes / No	Self-extinguished in the further 30 s Yes/No/---

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