

# NADAR SARASWATHI COLLEGE OF ENGINEERING AND TECHNOLOGY, THENI.

Course/Branch : B.E / EEE	Year / Semester :IV/VII	Format No.	NAC/TLP-07a.13
Subject Code :EE8701	Subject Name : High Voltage Engineering	Rev. No.	02
Unit No : 2	Unit Name : Dielectric Breakdown	Date	30.09.2020

## OBJECTIVE TYPE QUESTION BANK

S. No.	Objective Questions (MCQ /True or False / Fill up with Choices )	BTL
1	Corona results in A. improvement in power factor B. increased capacitive reactance of transmission line <b>C. radio interference</b> D. better regulation	L1
2	All of the following are the preferred properties of a dielectric gas EXCEPT A. high dielectric strength B. physiological inertness <b>C. low atomic number</b> D. good heat transfer	L2
3	Electro-mechanical breakdown of solid insulating materials occurs due to A. magnetic bum B. vibrations <b>C. mechanical stresses produced by the electrical field</b> D. electrical stresses produced by the voltage fluctuations	L1
4	Liquids are generally used as insulating materials up to voltage stresses of about A. 100 MV/cm B. 50 MV/cm <b>C. 50 kV/cm</b> D. 500 V/cm	L1
5	Vacuum insulation is used in all of the following EXCEPT A. Particle accelerators <b>B. EHT of color TV</b> C. Field emission tubes D. X-rays	L1
6	Which of the following gas has been used as insulating medium in electrical appliances? A. Nitrogen B. Carbon dioxide <b>C. Sulphur hexafluoride</b> D. Freon	L2
7	The electrical breakdown strength of insulating materials depends on A. nature of applied voltage B. imperfections in dielectric material C. pressure, temperature and humidity <b>D. all of the above</b>	L2
8	As compared to air the relative dielectric strength of sulphur hexafluoride is nearly A. 1.5 times <b>B. 2.5 times</b> C. 4.0 times D. 5.0 times	L2

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9	Transformers contribute to radio interference due to A. corona discharges in air B. internal or partial discharges in insulation C. sparking <b>D. any of the above</b>	L1
10	Impulse testing of transformers is done to determine the ability of (A) bushings to withstand vibrations <b>(B) insulation to withstand transient voltages</b> (C) windings to withstand voltage fluctuations (D) all of the above.	L1
11	The impurity in liquid dielectric which has significant effect in reducing the breakdown strength, is (A) dust (B) dissolved gases <b>(C) moisture</b> (D) ionic impurities.	L1
12	A good dielectric should have all the following properties EXCEPT (A) high mechanical strength (B) high resistance to thermal deterioration <b>(C) high dielectric loss</b> (D) freedom from gaseous inclusions.	L1
13	Van de Graaff generators are useful for <b>(A) Very high voltage and low current applications</b> (B) Very high voltage and high current applications (C) Constant high voltage and current applications (D) High voltage pulses only.	L1
14	In Van de Graaff generators output voltage is controlled by <b>(A) controlling the corona source voltage</b> (B) controlling the belt speed (C) controlling the lower spray point (D) any of the above.	L1
15	Insulators for high voltage applications are tested for (A) power frequency tests (B) impulse tests <b>(C) both (A) and (B) above</b> (D) none of the above.	L2
16	Transformers contribute to radio interference due to (A) corona discharges in air (B) internal or partial discharges in insulation (C) sparking	L2

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	<b>(D) any of the above.</b>	
17	Electro-mechanical breakdown of solid insulating materials occurs due to (A) magnetic bum (B) vibrations <b>(C) mechanical stresses produced by the electrical field</b> (D) electrical stresses produced by the voltage fluctuations.	L2
18	All of the following are the preferred properties of a dielectric gas EXCEPT (A) high dielectric strength <b>(B) physiological inertness</b> (C) low atomic number (D) good heat transfer.	L2
19	The essential condition for the Paschen's law to be valid is that (A) voltage must be dc <b>(B) voltage must be ac</b> (C) temperature must be constant (D) humidity must be low.	L2
20	The breakdown voltage in gases depends on (A) distance between the electrodes (B) relative air density (C) humidity <b>(D) all of the above.</b>	L2
21	Conduction and breakdown in commercial liquids is affected by (A) Solid particles (B) Vapour or air bubbles (C) Electrode material <b>(D) All of above</b>	L2
22	Stressed oil volume theory is applicable when (A) Small volume of liquid is involved <b>(B) Large volume of liquid is involved</b> (C) Large gap distance is involved (D) Pure liquids are involved	L2
23	The parameters that affect the breakdown strength of liquids is (A) Hydrostatic pressure and temperature (B) Dissolved impurities (C) Dielectric constant <b>(D) Pressure, temperature, dissolved impurities and suspended particles</b>	L2

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24	Which of the following liquids has highest breakdown strength? (A) Mineral oils <b>(B) Silicone oils</b> (C) Chlorinated hydrocarbon oils (D) Polyolefins or esters	L2
25	Which of the following property is important for a liquid to be used both for electrical insulation and cooling purposes? (A) Thermal conductivity (B) Viscosity <b>(C) Viscosity temperature characteristics</b> (D) Breakdown strength	L2
26	For good insulating oil, power factor or $\tan(\delta)$ at the given frequency of application should be (A) 0.1 <b>(B) less than</b> (C) 10-2 to 10-3 (D) 10-1 to 10-2	L1
27	The maximum breakdown strength that can be obtained with pure liquids like hexane is about <b>(A) 1 MV/cm</b> (B) 100 kV/cm (C) 250 to 300 kV/cm (D) 10 MV/cm	L1
28	In pure liquid dielectric, with the increase in hydrostatic pressure, the breakdown stress <b>(A) Increases linearly up to some extent and does not change afterwards</b> (B) Increases exponentially (C) Decreases (D) None of the above	L1
29	Breakdown is permanent in (A) Gases (B) liquids <b>(C) Solids</b> (D) all of above	L1
30	Thermal breakdown occurs when the heat generated inside the insulating material is <b>(A) Equal to or greater than the heat dissipated</b> (B) Less than that heat generated from the surface (C) Only under AC voltage application (D) None of the above	L1
31	Treeing and tracking is prevented by (A) Low temperature <b>(B) Clean,dry and undamaged surfaces and clean environment</b> (C) Reduced loading (D) No means	L1



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32	Breakdown due to internal discharges develops (A) In milliseconds (B) In few seconds (C) <b>Over a long duration of several days</b> (D) All of the above	L1
33	Electromechanical breakdown occurs when the thickness due to electrical stress is compressed or reduced to about (A) 0.9 (B) 0.8 (C) 0.7 (D) <b>0.6</b>	L1
34	Aging in electrical insulating materials under an electrical field means (A) Gradual reduction in dielectric strength which may lead to breakdown (B) Decrease in insulation resistance of the materials (C) Progressive building up of disruptive discharges inside the material (D) <b>All of the above</b>	L1
35	Composite dielectric is define as (A) Mixture of solid and liquid insulating material (B) Mixture of solid and gas insulating material (C) Mixture of gas and liquid insulating material (D) <b>Different insulating material connected in series and parallel</b>	L1
36	Composite dielectric is widely used in high voltage electrical system to (A) Reduced the cost (B) Reduced the temperature effect (C) Reduced the humidity effect (D) <b>Obtain superior dielectric strength</b>	L2
37	Composite dielectric breakdown mechanism is define by (A) Short term breakdown (B) Ageing and breakdown due to partial discharges (C) Aging and breakdown due to accumulation of charges on insulator surfaces (D) <b>All of above</b>	L2
38	The solid dielectric recently used for insulator of high voltage transmission line is (A) Ceramic (B) Glass (C) Mica (D) <b>Silicon rubber</b>	L2
39	The insulating material which forms an insulator of any desired shape for almost any kind of high voltage application (A) <b>Epoxy Resins</b> (B) Bakelite (C) Elastomers (D) Melamine	L2
40	The mechanism of breakdown in vacuum is due to	L2

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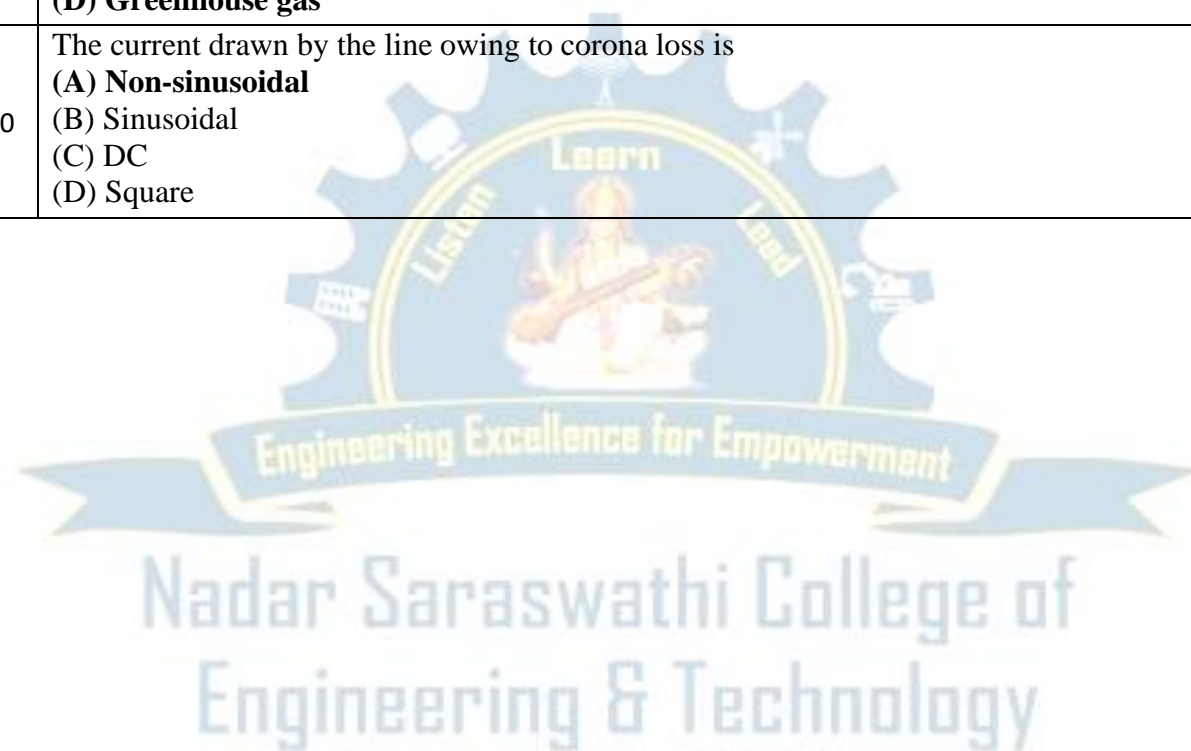
	(A) Particle exchange (B) Field emission (C) Clump formation <b>(D) All of the above</b>	
41	For electrical insulation purpose, the range of vacuum used is (A) 10-2 to 10-3 Torr <b>(B) 10-3 to 10-6 Torr</b> (C) 10-6 to 10-8 Torr (D) 10-8 and below	L2
42	Field emission theory is divided into (A) Anode and cathode heating mechanism <b>(B) Treering and Tracking</b> (C) Stressed volume (D) None of the above	L2
43	Clump theory was proposed by (A) Townsend (B) Trump (C) Loeb <b>(D) Cranberg</b>	L2
44	has the following property which is not favourable for use in electrical apparatus (A) High dielectric strength (B) High are quenching ability (C) It is not environmental friendly and causes global warming <b>(D) None of the above</b>	L1
45	The breakdown voltage of gas or air with increase in pressure under uniform field has_____ relation with pressure <b>(A) Almost linear</b> (B) Square (C) Nonlinear (D) Reciprocal	L1
46	The breakdown voltage of spark gap for impulse voltage is _____ compared to to The breakdown voltage of power frequency AC (A) Same <b>(B) Large</b> (C) Smaller (D) Cannot be predicted	L1
47	Among the common gases that are used for electrical insulation, which gas has the highest breakdown strength at atmospheric pressure? (A) Air (B) Nitrogen <b>(C)SF6</b> (D) Oxygen	L1

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48	A) Air (B) O <sub>2</sub> (C) SF <sub>6</sub> (D) Both O <sub>2</sub> and SF <sub>6</sub>	L1
49	One of the drawback of SF <sub>6</sub> gas for use as insulation is (A) High dielectric strength (B) Low liquefaction temperature (C) Arc quenching properties (D) <b>Greenhouse gas</b>	L1
50	The current drawn by the line owing to corona loss is (A) <b>Non-sinusoidal</b> (B) Sinusoidal (C) DC (D) Square	L1



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