BE Semester-VI (Electrical) Question Bank

(High Voltage Engg.)

All questions carry equal marks (10 marks)

Q.1	Explain ionization by collision, photo ionization and positive ion impact in gaseous insulating material.
Q.2	Explain basic Townsend's criteria for break-down in gaseous insulating medium. Derive expression for current growth in Townsend's criteria with consideration of primary and secondary ionization process.
Q.3	How electronegative gas is important in high voltage applications? Explain in detail with advantages.
Q.4	List the different type of Break down mechanism for the solid dielectric. Explain the Electromechnical breakdown in solid and prove that thickness of the solid insulating material cannot be reducing more then 40 %.
Q.5	Explain good properties of insulating materials.
Q.6	How the limitations of the Townsend's criteria can be improved by streamer theory for the breakdown with neat diagrams
Q.7	Discuss the different types of breakdown mechanism for liquid insulating material. Explain cavitations and bubble theory in detail.
Q.8	Explain how α and Y can be determine with experimental set-up.
Q.9	Short Notes on Formative Time and statically Time lags for the breakdown.
Q.10	Short Notes on Paschan's law for gaseous insulating medium
Q.11	Short Notes on Partial discharge of solid insulating material.
Q.12	Why is controlled triggering required in an impulse generator? Explain typical trigger arrangement.
Q.13	Explain with diagram Deltatron circuits.
Q.14	Explain any one method to produce switching surges.
Q.15	Explain cascaded transformer with a neat diagram.
Q.16	Explain C.V.T with phasor diagram.
Q.17	Explain how sphere gap can be used to measure peak value of voltages. What are the precautions needed to be taken.
Q.18	What is a partial discharge? Explain method to measure it with neat diagram.
Q.19	Explain Electrostatic Voltmeters with neat diagram.
Q.20	Explain schematic arrangement of potential divider to measure impulse voltage by C.R.O.
Q.21	Give comparison of townsend's and streamer mechanism.
Q.22	Discuss various mechanisms of vacuum breakdown.
Q.23	Explain impulse testing of transformers.
Q.24	Discuss epoxy resin and polyesters as solid dielectrics
Q.25	Discuss Marx circuit for multistage impulse generator.
Q.26	Draw and explain series capacitor peak voltmeter
Q.27	Explain High voltage Schering bridge
Q.28	Explain High voltage test on insulator
Q.29	Write a short note on design and layout of HV laboratory
Q.30	Explain experimental set up of any one method of testing of a circuit breaker
Q.31	What is insulation coordination? Explain statistical method of insulation

	coordination
Q.32	Write a short note on capacitance potential dividers.
Q.33	What are the methods for measurement of High AC voltage measurement? Explain any one in detail.
Q.34	Explain the different methods of high current measurements with their relative merits and demerits.
Q.35	Explain working principle, construction and applications of van-de-graff generator
Q.36	Explain the classification of solid dielectrics used in practice.
Q.37	What is the principle of operation of a resonant transformer? How is it advantageous over the cascade transformer units, if the power requirement is large?
Q.38	Explain conduction and breakdown in pure liquids.
Q.39	A 12 stage impulse generator has 0.126 μF capacitors. The wave front and the wave tail resistances connected are 800 ohms and 5000 ohms respectively. If the load capacitor is 1000 pF. Find the front and tail times of the impulse wave produced?
Q.40	With suitable illustrations explain how insulation level is chosen for various equipments in a 230/132 KV substation.