U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

June 2025 Semester End Main Examinations

Programme: B.E. **Semester: VII**

Branch: Electrical and Electronics Engineering **Duration: 3 hrs.**

Course Code: 22EE7PCHVE **Max Marks: 100**

Course: High Voltage Engineering

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

			UNIT - I	*CO*	*PO*	Marks
1	a)		Explain in detail any three properties of materials that are suitable for insulation.	*CO1*	*PO1*	**10**
	b)		Explain the relationship described by Paschen's Law between breakdown voltage, gas pressure, and gap distance.	*CO1*	*PO1*	**10**
			OR			
2	a)		Derive Townsend first and second ionization coefficients	*CO1*	*PO1*	**10**
	b)		Discuss how cavitation and bubble theory explains the phenomenon of conduction and breakdown in commercial liquids	*CO1*	*PO1*	**10**
			UNIT - II			
3	a)		Explain the principle of a resonant transformer? What are its advantages over cascaded transformers in producing very high voltages?	*CO2*	*PO2*	**10**
	b)		Illustrate with a diagram how cascaded transformers are connected and operated in a high-voltage setup.	*CO2*	*PO2*	**10**
			OR			
4	a)		With a neat circuit diagram and appropriate waveforms explain the working of i) Simple voltage doubler ii) Cockcroft Walton Voltage Multiplier Circuit	*CO2*	*PO2*	**10**
	b)		Explain tesla coil? How are damped frequency of oscillations obtained from tesla coil?	*CO2*	*PO2*	**10**
			UNIT - III			
5	a)		What are the different circuits that produce impulse waves? Obtain an expression for output voltage of any one impulse generator.	*CO2*	*PO2*	**10**

		b)	Explain a 3 stage marx impulse generator with neat diagram	*CO2*	*PO2*	**10**
			OR			
	6	a)	Explain the analysis of high impulse current generator with neat sketch?	*CO2*	*PO2*	**10**
		b)	With a near circuit, explain the operation of switching impulse circuit and plot the graph of output voltage with respect to time.	*CO2*	*PO2*	**10**
			UNIT - IV			
	7	a)	Explain the surge diverter operation with a neat circuit diagram for EHV system?	*CO3*	*PO6*	**10**
		b)	What is EMI and EMC? Explain the EMI and EMC protection against over voltages?	*CO3*	*PO6*	**10**
			OR			
	8	a)	Explain the effect of over voltages in various components of power system? (Any three)	*CO3*	*PO6*	**10**
		b)	Explain insulation coordination of high voltage with V-T curves?	*CO3*	*PO6*	**10**
			UNIT - V			
	9	a)	Explain construction and analyze the measurement of AC voltage with vertical sphere gap arrangement with neat sketch?	*CO2*	*PO2*	**10**
		b)	Explain peak voltmeter with potential divider circuit?	*CO2*	*PO2*	**10**
			OR			
	10	a)	Explain the following with neat sketch? I. Series Impedance Voltmeter II. Series capacitance voltmeter	*CO2*	*PO2*	**10**
		b)	Explain the Factors which influences the measurement of high voltage DC sphere gap arrangement.	*CO2*	*PO2*	**10**

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