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

Autonomous Institute Affiliated to VTU

January / February 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)		What are the properties of insulating materials used in High Voltage Applications? Explain each of their properties in detail.	*CO1*	*PO1*	**10**
	b)		Explain in detail the electron emissions due to Secondary Ionization process.	*CO4*	*PO1*	**10**
			OR			
2	a)		Derive townsend first and second ionization coefficients.	*CO3*	*PO2*	**10**
	b)		What is meant by Paschens Laws and their significance.	*CO3*	*PO2*	**10**
			UNIT - II			
3	a)		Discuss all the rectifier circuits used in HVDC with neat circuit diagrams and waveforms.	*CO1*	*PO1*	**10**
	b)		Demonstrate the role of Cockroft Walton Voltage multipliers in generating high voltages.	*CO1*	*PO1*	**10**
			OR			
4	a)		Discuss the role of Cascaded transformers in generating High Voltages. Explain any one in detail.	*CO3*	*PO2*	**10**
	b)		What are the components and working principles of Tesla Coil?	*CO3*	*PO3*	**10**
			UNIT - III			
5	a)		Derive the expression for any output impulse voltage.	*CO2*	*PO2*	**10**
	b)		Explain the required components of multi stage impulse generator.	*CO2*	*PO3*	**10**
			OR			
6	a)		Explore the working of Marx impulse generator.	*CO2*	*PO2*	**10**

		b)	Write a short note on impulse current generator giving its root causes and waveforms.	*CO2*	*PO3*	**10**
			UNIT - IV			
	7	a)	Classify the over voltages in the power system.	*CO2*	*PO2*	**10**
		b)	Explain the effect of over voltages on power system components.	*CO2*	*PO3*	**10**
			OR			
	8	a)	How a surge diverter is used in a power system. Explain with neat diagram	*CO3*	*PO4*	**10**
		b)	What is EMI and EMC? Explain the EMI and EMC protection against over voltages? Distinguish between the EMI and EMC protection against over voltages.	*CO3*	*PO4*	**10**
			UNIT - V			
	9	a)	Draw the diagram of the vertical Sphere gap and discuss how it is useful for measuring high voltages.	*CO2*	*PO3*	**10**
		b)	Explain the digital peak reading voltage meter with a neat sketch.	*CO2*	*PO3*	**10**
			OR			
	10	a)	Draw the diagram and explain the circuit operation of the following • High Ohmic Series Resistance with Microammeter • Resistance Potential Dividers for DC voltages	*CO2*	*PO3*	**10**
		b)	With a neat sketch, identify the operation of the peak reading meter with a potential divider.	*CO2*	*PO3*	**10**

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