U.S.N.										

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

Autonomous Institute Affiliated to VTU

September / October 2024 Supplementary Examinations

Programme: B.E. **Semester: V**
Branch: Electrical and Electronics Engineering **Duration: 3 hrs.**
Course Code: 22EE5PCPEN **Max Marks: 100**
Course: Power Electronics

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)	With a neat circuit diagram explain of any 4 different types of power electronics converters.	CO1	PO2	10
	b)	Describe the construction of power diodes and explain its static characteristics.	CO1	PO2	10
		UNIT – II			
2	a)	With a neat sketch explain the working of N-channel enhancement and N- Channel depletion Type MOSFET.	CO2	PO2	10
	b)	Compare the switching characteristics of BJT, MOSFET, and IGBT. Bring out the main Constructional difference between MOSFET and IGBT.	CO2	PO2	10
		OR			
3	a)	Explain any two methods of isolation of gate and base drive circuits.	CO2	PO2	10
	b)	Draw schematic diagram and switching characteristics of MOSFET. List its Merits and demerits.	CO2	PO2	10
		UNIT - III			
4	a)	Discuss the classification of DC-DC converters according to their I-v characteristics, by plotting the same. To which class the step up chopper belong.	CO3	PO2	06
	b)	A DC chopper has resistive load of 20 Ω & Vs = 220V when chopper is ON its voltage drop is 1.2 volt and chopper frequency is 10 KHz. If the duty cycle is 70%, determine the average output and chopper ON time.	CO3	PO3	04
	c)	With the help of Circuit and waveforms explain the operation of single phase bridge rectifier for RL load. Derive an expression for output rms voltage.	CO3	PO3	10

			UNIT - IV			
	5	a)	Explain sinusoidal pulse width modulation techniques available for voltage control of single Phase inverter.	**CO4**	**PO2**	**10**
		b)	With circuit diagram, explain the operation of a single phase full bridge inverter supplying a resistive load.	**CO4**	**PO2**	**10**
			OR			
	6	a)	Explain the operation of voltage source inverter. Determine the expression for instantaneous value of load current in a single phase current source inverter.	**CO4**	**PO2**	**10**
		b)	With a neat circuit diagram and waveforms, explain 180° mode of a three phase inverter.	**CO4**	**PO2**	**10**
			UNIT - V			
	7	a)	Describe the two transistor model of the SCR and by using the gain relationships, And define latching current and holding current.	**CO5**	**PO2**	**10**
		b)	With the help of circuit diagram and waveforms, explain the working of single Semi-converter with RL load.	**CO5**	**PO2**	**10**

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