CBCS SCHEME - Make-Up Exam

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BMT613A

Sixth Semester B.E./B.Tech. Degree Examination, June/July 2025
Power Electronics

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Define Power Electronics. List the applications of power electronics.	10	L1	CO1
	b.	Explain the isolation of gate drive using : (i) Pulse transformers (ii) Optocouplers	10	L2	CO1
		OR			
Q.2	a.	Explain the peripheral effects of power electronic equipments. What are the remedies for them?	10	L2	CO1
	b.	Write the symbol and control characteristics of the following devices: (i) SCR (ii) BJT (iii) MOSFET (iv) IGBT (v) GTO	10	L1	CO1
		Module – 2			
Q.3	a.	With the help of two transistor model, obtain the expression of Anode Current.	10	L3	CO2
	b.	Define latching current and holding current and write about V-I characteristics of SCR.	10	L1	CO2
		OR			
Q.4	a.	Define Commutation. With neat circuit diagram and waveforms write about natural commutation.	10	L3	CO2
	b.	Define forced commutation and write about self commutation.	10	L1	CO2
		Module – 3			
Q.5	a.	Define AC voltage controller. With the help of circuit diagram and waveforms write about the principle of ON-OFF control.	10	L3	CO3
	b.	With the help of neat circuit diagram and waveforms, write about the operation of single phase bidirectional AC voltage controller with resistive load.	10	L3	CO3
		OR			
Q.6	a.	With the help of neat circuit diagram and waveforms, write the principle of phase controlled converter operation.	10	L3	CO3
	b.	With neat circuit diagram and waveforms write about single phase semi-converter with R load.	10	L3	CO3

		Module – 4			
Q.7	**a.**	With the help of neat circuit diagram, write the principle of step down chopper with R load.	**10**	**L3**	**CO4**
	b.	With the help of neat circuit diagram, write the operation of class A chopper.	**10**	**L3**	**CO4**
		OR			
Q.8	**a.**	With the help of neat circuit diagram, write the principle of step up chopper.	**10**	**L3**	**CO4**
	b.	With the help of neat circuit diagram, write the operation of class C chopper.	**10**	**L3**	**CO4**
		Module – 5			
Q.9	**a.**	What is an inverter? Explain performance parameters of inverters.	**10**	**L2**	**CO5**
	b.	Explain with neat circuit diagram and waveforms single phase bridge inverter.	**10**	**L2**	**CO5**
		OR			
Q.10	**a.**	Explain with neat circuit diagram and waveforms principle of operation of inverters.	**10**	**L2**	**CO5**
	b.	Explain the following two types of voltage control in single phase inverters: (i) Single pulse width modulation (ii) Multiple pulse width modulation	**10**	**L2**	**CO5**

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