Model Question Paper-2 with effect from 2022-23 (CBCS Scheme)

USN | | | | | | | | | | |

Fourth Semester B.E. Degree Examination

Power Electronics

TIME: 03Hours Max. Marks: 100

Note: 01.Answer any FIVE full questions, choosing at least ONE question from each MODULE.

		Module -1	*Bloom's Taxonomy Level	Marks	CO's
Q.01	a	Define Power Electronics. List the applications of Power Electronics.	L1	10	CO1
	b	Draw the symbol and control characteristics of SCR, IGBT and GTO	L2	10	CO1
		OR			
Q.02	a	What are the types of Power Electronic converters?	L2	10	CO1
	b	With necessary waveforms explain the switching characteristics of power MOSFET.	L2	10	CO1
		Module-2			
Q.03	a	Derive an expression for anode current in terms of the common base current gain of the transistor (Two transistor analogy)	L2	10	CO2
	b	Distinguish between natural and forced commutation	L2	10	CO3
		OR			
Q.04	a	Explain the VI characteristics of SCR with different operating modes.	L2	10	CO2
	b	Draw the circuit of complimentary commutation, explain the principle of complimentary commutation.	L2	10	CO3
		Module-3			
Q.05	a	With neat diagram and waveform explain the operation of single phase AC voltage controller using on-off control. derive an expression for	L2	10	CO3
	b	Explain the operation of a bidirectional AC voltage controller for an inductive load.	L2	10	CO3
		OR			
Q.06	a	With the help of waveform and circuit diagram explain the operation of single phase semi converter	L2	10	CO3
	b	Explain the operation of 3phase full eave fully controlled bridge rectifier with R load	L2	10	CO3

		Module-4			
Q.07	a	Explain the expression for peak to peak ripple in the load current in case of step down chopper with RL load.	L2	10	CO2
	b	The step down DC converter has a resistive load of R=10Ω and the input voltage is Vs= 220V. When the converter switch remains on, its voltage drop is Vch= 2Vand f=1KHz. If the duty cycle is 50% determine i) the average output voltage.	L3	10	CO4
		OR			
Q.08	a	Explain the principle of operation of a step up chopper.	L2	10	CO2
	b	With a neat diagram explain four quadrant operation of chopper.	L2	10	CO2
		Module-5			
Q.09	a	Explain the principle of single phase half bridge inverter with relevant circuit diagram and waveform.	L2	10	CO2
	b	Write a note on performance parameters of inverters. i) Harmonic factor of nth harmonic ii) Total Harmonic Distortion (THD) iii) Distortion Factor(DF)	L2	10	CO4
		OR			
Q.10	a	Explain PWM? Write the various PWM techniques. How do they differ from each other?	L2	10	CO4
	b	Compare voltage source inverter and current source inverter.	L2	10	CO4