PRN:		Course Code:	ECE 304

Third Year **B. Tech** End Semester Examination Summer 2023

Power Electronics

Day and Date: Thursday, 15/06/2023 Max Marks: **100**

Time: 10.30 to 1.30pm Duration: **03** hrs

Instructions: All questions are compulsory.

			Marks	Bloom's Level	CO
Q.1		**Attempt the following**			
	a)	Explain V-I characteristics of SCR, with its construction and power ratings.	08	L4	CLO2
	b)	Compare MOSFET and IGBT	08	L3	CLO2
		OR			
	b)	For a string voltage of 3300V, six 6 SCR's are connected in series, each of 600V rating, calculate derating factor and string efficiency of SCR's.	08	L3	CLO2
Q.2		**Attempt the following**			
	a)	Explain SCR protection circuits.	08	L4	CLO2
	b)	Explain construction and modes of operation for TRIAC.	08	L5	CLO2
		OR			
	b)	Explain class A commutation circuit of SCR.	08	L5	CLO2
Q.3		**Attempt any two from the following**			
	a)	Explain principal and operation of 1 phase full bridge inverter.	08	L4	CLO1
	b)	Elaborate 120-degree mode of conduction for 3 phase inverter.	08	L4	CLO1
	c)	Explain circuit diagram and waveforms of step-up Chopper.	08	L4	CLO1
Q.4		**Attempt any two from the following**			
	a)	Comment on SMPS and its applications.	08	L3	CLO1
	b)	Explain circuit diagram and waveforms of step-down Chopper.	08	L3	CLO1
	c)	Explain principal and operation of 1 phase full wave fully controlled rectifier with RL load and freewheeling diode.	08	L3	CLO1
Q.5		**Attempt any Two of the following**			
	a)	Explain circuit diagram and waveforms of Jone's Chopper.	09	L3	CLO3
	b)	Illustrate dielectric heating.	09	L3	CLO3
	c)	Analyze class E Chopper or four quadrant chopper.	09	L2	CLO3
Q.6		**Attempt any Two of the following**			
	a)	Comment on PLC and ladder diagram programming.	09	L2	CLO4
	b)	Elaborate SCADA system.	09	L3	CLO4
	c)	Explain induction heating.	09	L3	CLO4

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