Q.P. Code: 20EE0209 **R20**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year II Semester Regular Examinations October-2022

POWER ELECTRONICS

(Electrical and Electronics Engineering)

Time: 3 hours Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	Draw and explain V-I characteristics of SCR and Its working.	**L2**	**12M**
	OR		
2	Describe the different types of Thyristor Turn-on Methods.	**L2**	**12M**

UNIT-II

3	The single-Phase half wave Controlled converter has a purely resistive load of R=10Ω & the delay angle is α=60, if supply voltage is 230V,50 Hz. Determine (i) Rectification efficiency (ii) Form factor (iii) Ripple factor (iv) Transformer utilization factor (v) Peak inverse voltage for SCR T1.	**L2**	**12M**
	OR		
4	Illustrate the operation of Three phase fully controlled rectifier with R- load at α=60 and also derive the average and RMS load voltage.	**L4**	**12M**

UNIT-III

5	A DC Chopper (Step-Down) has a resistive load R=10Ω and the input voltage=200v.When the chopper remains on, its voltage drop is 2V. The chopper frequency is 1Khz. If the duty cycle is 50% Determine i) Average Output Voltage, ii) RMS Output Voltage, iii) Chopper Efficiency & iv) Effective input resistance of chopper.	**L3**	**12M**
	OR		
6	Illustrate the boost converter operation with help of diagram and also draw the output waveforms.	**L4**	**12M**

UNIT-IV

7	Describe the principle of operation of single phase to single phase step-up midpoint cyclo-converter with Resistive Load.	**L2**	**12M**
	OR		
8	Illustrate the principle of operation of single phase to single phase step- down Bridge type cycloconverter with Resistive Inductive Load for Continuous Load Current.	**L4**	**12M**

UNIT-V

9	Illustrate the operation of single-phase full wave ac voltage controller with R-L load.	**L4**	**12M**
	OR		
10	A single-phase voltage controller is employed for controlling the power flow from 230V, 50Hz source into a load circuit consisting of R=3 Ω and L=4 Ω. Calculate i) the range of firing angle ii) the maximum value of rms load current iii) the maximum power and power factor (iv) The maximum values of average and rms thyristor currents	**L3**	**12M**

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