Exam.Code:0930
Sub. Code: 33679

2055

B.E. (Electronics and Communication Engineering)

Sixth Semester

EC-625: Power Electronics

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: Attempt <u>five</u> questions in all, including Question No. I which is compulsory and selecting two questions from each Section.

x-x-x

1.	Answer in brief and to the point.	
	a) Summarize the conditions under which a transistor operates as a switch.	
	b) Why power factor of semi converter is better than full converter?	
	c) On the basis of operation, differentiate feedback diode from freewheeling diode.	
	d) List and define various disturbances on power line.	
	e) Discuss the use of filters at the output of inverters.	(5x2)
	Section – A	
2.	a) With the help of suitable circuit diagram, illustrate the need of snubber circuit in thyristor-based converter.	5
	b) Examine the structure and different modes of operation of TRIAC with its characteristics. Why TRIAC is not popular as compared to SCR?	5
3.	a) Explain the operation of a semi-converter elaborating the function of feedback diodes.	5
	b) A single phase bridge converter is utilized to produce regulated DC output voltage. The input voltage is 230 V and the load current is 8A for a firing angle of 30 degree. Calculate the dc output voltage with and without freewheeling diode.	5
4.	a) Explain the working strategy of a chopper circuit to obtain higher or lower voltage at the output.	5
	b) A step up chopper is operated with a duty ratio of 0.75 for a dc input of 120 V. Determine the output voltage for a load resistance of 5 ohm.	5
	Section – B	
5.	a) Explain the principle of operation of single-phase full-bridge square wave inverter and also discuss the role of its driver circuit.	7
	b) Discuss if a converter can be made to operate in inverter mode.	3
6.	a) Draw and explain the block schematic of SMPS and mention its advantages over linear power supply.	6
	b) Describe the operation of a current source inverter with the help of suitable circuit and waveforms.	4
7.	Write technical notes on:	
	a) Load resonant converter.	5
	b) Separately excited DC motor drive.	5

x-x-x