



**PART – B: (Short Answer Questions)****(2 x 10=20 Marks)**Q.2. Answer ALL questions

	[CO#]	[PO#]
a. Mention some of the applications of controlled rectifier.	CO3	PO1
b. What are the applications of an inverter?	CO4	PO1
c. Write down the applications of IGBT?	CO2	PO1
d. Define latching current of SCR.	CO1	PO1
e. Power BJT is a current controlled device. Why?	CO1	PO1
f. Give an expression for average voltage of single phase converters.	CO3	PO1
g. Classify power semiconductor devices give examples	CO1	PO1
h. What is the function of freewheeling diodes in controlled rectifier?	CO3	PO1
i. Give two advantages of CSI.	CO4	PO1
j. Define circuit turn off time of SCR.	CO2	PO1

**PART – C: (Long Answer Questions)****(10 x 4 = 40 Marks)**Answer ALL questions

	Marks	[CO#]	[PO#]
3. a. A single phase 230V, 1Kw heater is connected across 1 phase 230V, 50Hz supply through an SCR. For firing angle delay of 450 and 900 , calculate the power absorbed in the heater element	5	CO3	PO2
b. Explain the construction of SCR with neat sketch.	5	CO1	PO1
(OR)			
c. A Chopper circuit is operating at a frequency of 2 kHz on a 460 V supply. If the load voltage is 350 volts, calculate the conduction period of the thyristor in each cycle.	5	CO4	PO2
d. Discuss the different modes of operation of thyristor with the help of static VI characteristics.	5	CO1	PO1
4. a. Design a circuit to produce average voltage of 40V across 100Ω load resistor from a 120V RMS 60hz AC source. Determine power absorbed by the resistance and power factor.	5	CO3	PO2
b. Draw the switching characteristics of SCR and explain it.	5	CO1	PO1
(OR)			
c. Explain the operation of 1-phase AC voltage controller with R load.	5	CO4	PO1
d. Explain the method of phase control with relevant sketches derive an expression for r.m.s. Output voltage.	5	CO3	PO1
5. a. Discuss the working of 1phase bridge converters with RLE load using relevant waveforms.	5	CO2	PO1
b. Discuss the principle of operation of Boost converter with suitable waveforms.	5	CO3	PO1
(OR)			
c. With the help of neat diagram explain the operation of BJT.	5	CO1	PO1
d. Draw the circuit diagram and explain the working of Half Wave Rectifier	5	CO3	PO1
6. a. Explain the various types of triggering methods of SCR	5	CO2	PO2
b. Explain the operation of single phase full bridge inverter with neat sketch.	5	CO4	PO1
(OR)			
c. Draw the circuit diagram of single-phase full wave fully controlled rectifier with inductive load. Explain the operation of circuit relevant sketches.	5	CO3	PO1
d. A 230V, 50hz supply connected to load resistance of 12ohm through half wave controlled rectifier. If firing angle is 60 degree, calculate (i) Average output voltage (ii) RMS output voltage	5	CO4	PO1

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