

Roll No.

Total No. of Page : 2

BT-7/D11 : 7826

ECE-427-E/ECE-429-E : Power Electronics

Time : Three Hours

Maximum Marks : 100

Note:- Attempt 5 questions in all, selecting at least ONE from each Unit.

UNIT-I

Q.1. Describe the construction of SCR, draw its characteristics & Discuss its operation. Is there any negative resistance region? If so, explain how this region is achieved? 20

- Q.2 a) What are the conditions for satisfactory parallel-connections of SCRs?
- b) Draw a UJT firing circuit. Describe its operation & draw its characteristics indicate peak & valley points there on. 15

UNIT-II

Q.3 Draw the ckt. diagram for 3 phase half wave rectifier. Explain its operation for continuous conduction for

$\alpha < 30^\circ$ & discontinuous condition $\alpha > 30^\circ$. Draw all relevant wave shapes such as output voltage, thyristor voltage etc. Also derive equation (s) for output d.c. voltage. 20

Q.4 Explain Extinction angle control of power factor improvement. 20

UNIT-III

Q.5 Draw the circuit diagram of current source inverter & Explain its operation, using all relevant wave forms. 20

Q.6 Draw a single phase Mc Murray Bridge Inverter. Draw all voltage & current wave forms & Explain its operation for different intervals. 20

UNIT-IV

Q.7 Draw the four quadrant chopper & Explain its operation, clearly outlining the sequence of steps, along with the requisite wave shapes. 20

- Q.8 Write brief technical notes on:
 - a) Circulating - type cyclo converter 15
 - b) Basic Principle of cyclo converter. 5