SHAHEED BHAGAT SINGH STATE TECHNICAL CAMPUS, FEROZEPUR

ROLL No: | | | | | | | | | | | | Total number of pages:[2]

B.Tech. || EE || 5th Sem

POWER ELECTRONICS AND DRIVES

Subject Code:BTEE-502A

Paper ID:

Batch 2015 onwards

Time allowed: 3 Hrs **Max Marks: 60**

Important Instructions:

- **All questions are compulsory**
- **Assume any missing data**

PART A (10x 2marks)

Q. 1. Short-Answer Questions:

(a) Differentiate between holding current and latching current?

(b) Give the importance of series inverter?

(c) What do you mean by series and parallel operations of SCR?

(d) What is duty cycle of chopper?

(e) What is Triac? Mention its applications.

(f) Draw Snubber circuit?

(g) Mention Drawback of series inverter?

(h) Explain the working principal of cycloconverter?

(i) What is the role of dv/dt in the operation of a thyristor?

(j)Draw the diagram of two transistor analogy

PART B (5×8marks)

Q. 2. What is SCR? Explain each mode of operations? CO1

OR

Explain the V-I Characteristics of thyristors by elaborating the following: CO1
(a) latching current. (b) holding current. (c) on-state and off-state condition.
(d) turn-on and turn-off times.(e) finger voltage.?

Q. 3. Describe the working of a single phase one- pulse SCR controlled converter CO3

with RL load with neat wave forms. Derive the expression for the load current and voltage across the SCR?

OR

Explain the working of Dual converter with circulating current and without circulating current? CO3

Q. 4. What is chopper? With the help of neat diagram explain two quadrant chopper and also drive the expression for average and rms voltage output of a step down chopper? CO3

OR

What is the basic principal of cycloconverter? With the help of neat diagram explain the operation of center tapped transformer type single phase cycloconverter with resistive load? CO3

Q. 5. What is commutation? Design and explain the working of Class C and Class D commutation? CO2

OR

What is commutation? Design and explain the working of Class A and Class B commutation? CO2

Q. 6. Design and explain the Three phase 120 degree VSI? CO3

OR

Describe the modified McMurray half bridge inverter with appropriate voltage and current waveforms? CO3