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GIET UNIVERSITY, GUNUPUR – 765022
M. Tech (Second Semester Examinations) – October' 2021
MPCPE2020 – DIGITAL CONTROL OF POWER ELECTRONIC AND DRIVE SYSTEMS
(Power Electronics)

Time: 2 hrs

Maximum: 50 Marks

(The figures in the right hand margin indicate marks)

PART – A

Q.1. Answer **ALL** questions

(2 x 10 = 20)

- a. What are the different methods of firing circuits for line commutated converter?
- b. What is a snubber circuit?
- c. State the applications of simulation circuit?
- d. Define Circuit Turn Off Time?
- e. What are the different elements of gate/base drive circuit?
- f. Why modeling of a particular circuit required?
- g. What is TRIAC?
- h. What is latching current and holding current?
- i. Draw the characteristics of SCR?
- j. Write the advantages of IGBT over SCR?

PART – B

(6 x 5 = 30 Marks)

Answer ANY FIVE questions

Marks

2. Explain the Space vector representation of 6-pulse converter in rectifier mode with resistive load. (6)
3. A single phase full converter is operated from 230V, 50Hz supply. The load current is continuous and ripple free with an average value of 10A. For a firing angle of 30° Determine Average Voltage, RMS Voltage, Form factor and Rectification Efficiency (6)
4. Explain the different components of IGBT and Power Transistors in simulation (6)
5. Explain the operation of 1-phase full converter rectifier with resistive and inductive loads with the help of neat circuit diagram and current wave forms. (6)
6. Formulate the solution procedure to find circuit current in an ac excited R-L series circuit using backward Euler method. (6)
7. Derive the model and hence the output quantities of a three-phase controlled rectifier. (6)
8. Explain the various pulse width modulation schemes for voltage control. (6)

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