

(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 2012415

Roll No

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B.TECH

Carry Over Theory Examination (Sem-V), 2016-17

POWER ELECTRONICS

Time : 3 Hours

Max. Marks : 100

- Note : i. Attempt all questions.
ii. All questions carry equal marks.

SECTION - A

1. Attempt all parts. All parts carry equal marks. Write answer of each part in short. (10×2=20)
 - a. Define latching current.
 - b. What are the advantages of MOSFET over BJT?
 - c. What is the function of free wheeling diodes?
 - d. Give an expression for average voltage of single phase semi converters.
 - e. What is meant by commutation? What are the types of commutation? uptuonline.com
 - f. Write the applications of power electronics devices.

- g. What is meant by step - up and step - down chopper?
- h. Why thyristors are not preferred for inverters?
- i. What does ac voltage controller mean? What are the applications of ac voltage controllers?
- j. What do you mean by holding current?

SECTION - B

Note : Attempt any 5 questions from this section.

(5×10=50)

2. What are the different methods to turn on the thyristors? Explain any three methods. uptuonline.com
3. Draw the two transistor model of SCR and derive an expression for anode current.
4. Derive the expressions for average output voltage and rms output voltage of 1 phase semi converter. Semi converter bridge circuit, (b) waveforms of v_o , i_o (c) Average output voltage v_{rms} value of output voltage expression.
5. Describe the principle of step - up chopper. Derive an expression for the average output voltage in terms of input dc voltage & duty cycle.
6. Explain with circuit diagram and waveforms the operation of BJT as a switch. uptuonline.com
7. Explain the working principle of single phase to single phase cycloconverters with appropriate Waveform and bridge circuit?
8. Explain the construction and working principle of SCR. Also draw the V-I characteristics of SCR.

9. What is the need of protective device in power electronics devices? Explain the snubber circuit with the help of circuit diagram? uptuonline.com

SECTION - C

Note : Attempt any 2 questions from this section :

(2×15=30)

10. What is meant by forced commutation? What are the different types of commutation? Explain class - C commutation technique with appropriate bridge circuit?
11. Describe the working of 3 phase fully controlled bridge converter in the Rectifying mode and inversion mode. And derive the expressions for average output voltage and rms output voltage & draw the appropriate waveforms.
12. Describe the operation of series inverter with aid of diagrams.
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