Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(EE)/(Electrical & Electronics)/(Electronics & Electrical)
(2011 Onwards)

(Electrical Engineering & Industrial Control) (2012 Onwards)

(Sem.–5)

POWER ELECTRONICS

Subject Code : BTEE-504

M.Code : 70557

Time : 3 Hrs. Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Answer briefly :

a) Differentiate between holding and latching current in a Thyristor.

b) What is the role of **dv/dt** in the operation of a Thyristor?

c) Differentiate between Diac and Triac.

d) What is the function of free wheeling diode?

e) What is a LASCR?

f) Write applications of a Thyristors.

g) What is the importance of Surge current rating of a Thyristor?

h) Draw turn on characteristics of a Thyristor.

i) Draw snubber circuit.

j) What is duty cycle of a chopper?

SECTION-B

Q2 Explain two transistor model of a Thyristor.

Q3 Compare power MOSFETs with BJTs.

Q4 Discuss operation of single phase mid-point cycloconverter with R-L load for continuous conduction with relevant circuit diagram and necessary output waveforms.

Q5 Describe the working of step down chopper and derive expression for output voltage.

Q6 Draw and explain the simple SCR series inverter circuit employing class A type commutation with the help of important waveforms. State the limitations of this inverter.

SECTION-C

Q7 What are the methods for voltage control within the inverters? Explain in detail with waveforms.

Q8 a) Define string efficiency for series /parallel connected SCRs .Show the string efficiency of two series connected SCRs is less than one.

b) Explain the difference between class A and class B commutation.

Q9 A 230 V, 50 Hz, one pulse SCR controlled converter is triggered at a firing angle of 40° and the load current extinguishes at an angle of 210°. Find the current turn off time, average output voltage and average load current for

a) R = 5Ω and L = 2 mH.

b) R = 5 Ω, L = 2 mH and E = 110 V.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.