Seat No.	

Total No. of Pages : 3

T.Y.B.Tech. (ETC) (Semester-VI) (CBCS) Examination, November - 2023

POWER ELECTRONICS

Sub. Code : 81648

Day and Date : Tuesday, 21 - 11 - 2023 **Total Marks : 70**

Time : 2.30 p.m. to 5.00 p.m.

Instructions :
1) **All questions are compulsory.**
2) **Figure to the right indicate full marks..**
3) **Assume suitable data wherever necessary.**

Q1) Attempt the following. **[14]**

a) What is the most suitable method to turn on the SCR device among the following?

i) Gate Triggering Method

ii) Forward Voltage Triggering Method

iii) Temperature Triggering Method

iv) dv/dt triggering Method .

b) The inverter can be classified as

i) Voltage Source Inverter

ii) Current Source Inverter

iii) Both (i) and (2)

iv) Power Inverter

c) Chopper control for DC motor provides variation in

i) Input voltage

ii) Frequency

iii) Current

iv) None of the above

8674

d) In a B-2 type full controlled bridge converter

i) one SCR conducts at a time

ii) two SCRs conduct at a time

iii) three SCRs conduct at a time

iv) four SCRs conduct at a time

e) Relay Type stabilizer is also known as

i) Constant voltage transformer.

ii) Solid state voltage stabilizer.

iii) Tap changing AC voltage stabilizer.

iv) Servo type AC voltage stabilizer.

f) In case of class A type commutation or load commutation with low value of R load the

i) L is connected across R

ii) L-C is connected across R

iii) L is connected in series with R

iv) L-C is connected in series with R

g) Which of the following semiconductor device capable of absorbing the surge energy without undue temperature rise?

i) Bipolar Transistor ii) Selenium Diode

iii) IGBT iv) MOSFET

Q2) Attempt any two of the following. **[14]**

a) Describe the following terms

a) Forward break over voltage

b) latching current

c) Holding current

b) What are the performance parameters of converters, explain in detail.

c) Explain the different methods of commutation and describe any one of it.

Q3) Attempt any two of the following. **[14]**

a) Describe different methods of Gate triggering. Explain R-C.gate triggering circuit of SCR.

b) Draw and explain the characteristics of GTO.

c) A single phase semi converter operated from 230V at 50Hz, if $\alpha = \pi/6$. Find out

i) average o/p voltage ii) RMS output voltage

iii) Form Factor iv) Ripple Factor

Q4) Attempt any two of the following. **[14]**

a) What are the techniques for harmonic reduction in. inverter .Explain any one in detail.

b) State and explain control techniques of chopper.

c) Explain Non- drive applications using induction heating with circuit diagram

Q5) Attempt any two of the following. **[14]**

a) Explain Switched mode power supply (SMPS) with circuit diagram

b) Explain the single phase half-Bridge Inverter with.RL load.

c) Explain the MORGAN chopper along with the waveform & circuit diagram.

8674