Oct-22/TE/Insem-534
T.E. (Electrical)
POWER ELECTRONICS
(2019 Pattern) (Semester - I) (303142)

Time : 1 Hour]   *[Max. Marks : 30*

Instructions to the candidates:
1) *Answer Q1 or Q2, Q3 or Q4.*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Figures to the right indicate full marks.*
4) *Assume suitable data if necessary.*

Q1) a) State and explain different modes of operation of SCR with the help of V-I characteristics. **[5]**

b) Explain the triggering of SCR using RC gate triggering. **[5]**

c) Explain the following specifications of Thyristor - **[5]**

     i)   dv/dt

     ii)   di/dt

     iii)   VGT

     iv)   VRRM

     v)   IT (RMS)

OR

Q2) a) With neat constructional diagram explain working of GTO. Draw its V-I Characteristic. **[5]**

b) What is commutation? Explain class C commutation of SCR. **[5]**

c) With neat circuit diagram explain how overcurrent protection provided to Thyristor. **[5]**

P.T.O.

Q3) a) Explain first quadrant chopper. How these choppers can be used to obtain two quadrant choppers? **[5]**

b) Draw and explain output and transfer characteristics of MOSFET. **[5]**

c) What is the duty cycle of chopper and explain PWM and FM techniques of voltage control. **[5]**

OR

Q4) a) Explain class 'B' chopper with neat circuit diagram. Draw output voltage & output current waveforms. **[5]**

b) Describe the principle of step up chopper. Derive an expression for average output voltage in terms of input voltage and duty cycle. **[5]**

c) A step up chopper has input voltage of 220 V and output voltage of 660V. If the conducting time of chopper is 100µsec, calculate the pulse width of output voltage. **[5]**

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