Total No. of Questions : 8]

SEAT No. : [ ]

P3601

[Total No. of Pages : 2

[5560]-556
TE(E & TC)
POWER ELECTRONICS
(2015 Pattern) (Semester - II) (304186)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.***
2) ***Figures to the right indicate full marks.***

Q1) a) Explain the nature of gate characteristics & analyze the gate circuit requirements. **[7]**

b) Draw & explain working of single phase fully controlled rectifier for R load .Draw input output Voltage waveforms. State equation for average output voltage. **[7]**

c) Explain 120° conduction mode of three phase inverter for balanced star R load with circuit diagram **[6]**

OR

Q2) a) Describe the concept of Safe operating areas of MOSFET & IGBT. **[7]**

b) Draw & explain three phase semi converter for R load with input & output voltage waveforms. **[7]**

c) Explain 180° conduction mode of three phase inverter for balanced star R load with circuit diagram **[6]**

Q3) a) Explain the operation of step down chopper with circuit diagram and derive an expression for its output voltage in terms of chopping frequency. **[8]**

b) Classify SMPS ,draw a generalized block diagram of SMPS State its advantages and limitations. **[8]**

OR

Q4) a) In DC chopper ,average load current is 30 A, Chopping freq. is 500 Hz, Vs = 110V.Calculate on and off period of chopper ,if RL is 2 Ohms. Illustrate your answer with suitable waveforms **[8]**

b) Explain working of single phase full wave bidirectional controller using SCR with R load. Draw waveforms and State equation of RMS output voltage. **[8]**

P.T.O.

Q5) a) What is resonant converter? State necessity of the resonant converter? **[8]**

b) Explain design considerations of heat sink to reduce switching losses in the power circuits? Name four protection devices. **[8]**

OR

Q6) a) Compare zero current and zero voltage switching resonant converters? **[8]**

b) A power device has a thermal resistance of 200 deg C/watt. Calculate the maximum permissible power dissipation when maximum junction temperature is 75 deg C and ambient temperature is 37dgs C? **[8]**

Q7) a) With a circuit diagram, explain an application of Triac to control the domestic fan speed. **[8]**

b) Explain working of LED lamp Driver Circuit used as a domestic tube light. **[10]**

OR

Q8) a) What are Drives? Explain the working of Variable frequency three phase induction motor drive. **[8]**

b) Explain working of on Line UPS. State four important commercial specifications. **[10]**