

T.E. (Electronics)

POWER ELECTRONICS AND APPLICATIONS

(2012 Course) (304212) (Semester - VI) (End Sem.)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right side indicate full marks.*
- 4) *Assume suitable data if necessary.*

- Q1)** a) Draw the circuit of a 3 ϕ controlled full wave rectifier and describe its working with suitable waveforms. [7]
- b) Explain with the help of circuit diagram and waveform working of 1 ϕ full bridge inverter. [7]
- c) How are choppers classified? Explain with a typical application. [6]

OR

- Q2)** a) With the help of circuit diagram and output waveforms explain the working of 1 ϕ LCC for inductive load. What is meant by inversion operation of LCC. [6]
- b) With the help of neat diagram and waveforms explain operation of 120° mode of 3 ϕ inverters for star load. [7]
- c) Compare different control strategies of a chopper. [7]

- Q3)** a) With the help of circuit diagram and waveforms, explain the operation of SLR DC-DC converter. [6]
- b) Define power quality. State various power line disturbances and their sources. [6]
- c) Compare ZCS and ZVS. [4]

OR

- Q4)** a) Compare switched, linear and resonant converter. [4]
b) Explain the concept of zero current switching (ZCS) and zero voltage switching (ZVS) using circuit diagram and waveforms. [6]
c) With the help of neat diagram and waveforms explain the operation of ZCS resonant switch DC-DC converter. [6]

- Q5)** a) Draw the block diagram of an online UPS and explain the function of each block. [8]
b) Draw the block diagram of HVDC transmission system and explain its operation. [8]

OR

- Q6)** a) Explain the operation of electronic ballast with the help of block diagram. [8]
b) Draw the waveforms and circuit diagram of 12 pulse converter. Explain its operation. [8]

- Q7)** a) Explain with block diagram grid connected PV system. [8]
b) Explain the need of battery in PV system. State factors involved in selection of battery. [4]
c) What is meant by MPPT? Explain in brief analog and digital methods used for implementation of MPPT. [6]

OR

- Q8)** a) Write a short note on BLDC. [8]
b) State advantages, disadvantages and applications of solar cell. [4]
c) Briefly explain vertical axis wind turbine generator. [6]

