

Total No. of Questions : 8]

SEAT No. :

P2869

[4958]-1058

[Total No. of Pages : 2

T.E.(Electronics)

POWER ELECTRONICS AND APPLICATIONS

(2012Course) (Semester-II) (End Sem)(304212)

Time :2½Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answer Q.1 or Q.2,Q.3or Q. 4, Q.5 or Q. 6 , Q .7 or Q. 8 .*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*
- 4) *Assume suitable data, if necessary.*

Q1) a) What are converters? With the help of neat circuit diagram and relevant waveform, explain the operation of 3Φ semi controlled bridge converter. [7]

b) Draw circuit diagram of half bridge inverter. Obtain expression for the output voltage of half bridge inverter. Derive expression for the rms value of the fundamental component of output voltage. [7]

c) The step down chopper is operating with a resistive load of 10Ω and input voltage of 220 V DC. When the chopper switch remains on, its voltage drop V_{ch} is 2 V. The chopper frequency is 1 kHz, If the duty cycle is 50%, determine the average output voltage and RMS output voltage and chopper efficiency. [6]

OR

Q2) a) Draw 3Φ fully controlled bridge converter. Obtain an expression for average output voltage. [7]

b) Compare 120° and 180° modes of conduction for a 3Φ with star connected resistive load. [6]

c) Explain with circuit diagram, the operation of step up chopper. [7]

Q3) a) What is need of resonant converters? Explain hard and soft switching. [6]

b) Explain the operation of zero voltage switching(ZVS) resonant dc-dc converter with the help of equivalent diagrams and waveforms. [6]

c) Explain types of power line disturbances with sources and preventive techniques. [4]

OR

P.T.O.

- Q4)** a) Explain converter with circuit diagram, waveforms the operation of SLR dc-dc resonant converter. [8]
b) Draw the waveforms and circuit diagram of 12 pulse converter used in HVDC transmission. Explain its operation. [8]
- Q5)** a) Write short notes on Electronic Ballast and Power electronics in capacitor charging applications. [8]
b) Compare ON-line UPS with OFF-line UPS with typical block diagram. Justify why ON-Line UPS is better than OFF-line UPS. [8]

OR

- Q6)** a) Explain with block schematic working of OFF-line UPS. State its specification and applications. [8]
b) Explain working principle of Universal motor and compare with BLDC motor. [8]
- Q7)** a) Explain with block diagram grid connected PV system. [6]
b) Explain wind energy system and control of wind turbines. [6]
c) Distinguish between horizontal axis wind turbine generator and vertical axis wind turbine generator. [6]

OR

- Q8)** a) Explain the need of renewable energy sources. Explain any one in detail. [6]
b) Compare stand alone PV system and grid connected PV system. [6]
c) Explain in brief isolated grid supply system with multiple wind turbines. [6]

