Total No. of Questions : 8]

SEAT No. :

P2869

[Total No. of Pages : 2

[4958]-1058
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 Vch 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

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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]**