Total No. of Questions : 8]

SEAT No. :

P2402

[Total No. of Pages : 2

[4758]-563

T.E. (Electronics)

POWER ELECTRONICS & APPLICATIONS

(2012 Course) (End -Semester)

Time : 2½ Hours] *[Max. Marks :70*

Instructions to the candidates:

1) ***Answer Q.No.1 or 2, Q.No.3 or 4, Q.No.5 or 6, Q.No.7 or 8.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Use of logarithmic tables and non programmable electronic pocket calculator is allowed.***
5) ***Assume suitable data, if necessary.***

Q1) a) Derive the expression for the average output voltage of 1φ full converter. Draw the variation of average output voltage with α. Also draw the output voltage waveforms. **[6]**

b) With the help of neat diagram and waveforms explain operation of 120^{o} conduction mode of 3φ inverters for star connected balanced resistive load. **[7]**

c) How are choppers classified? Explain with a typical application. **[7]**

OR

Q2) a) Explain triggering circuit requirements for 3φ full converter. **[6]**

b) Explain modified sinusoidal PWM method for controlling output voltage and harmonic reduction in bridge inverter. **[7]**

c) State the advantages and disadvantages of SMPS over linear power supply. **[7]**

Q3) a) With the help of circuit diagram and waveforms, explain the operation of SLR DC-DC converter. **[8]**

b) Define power quality. State various power line disturbances and their sources. **[8]**

OR

P.T.O.

Q4) a) With the help of neat diagram and waveforms explain the operation of ZCS resonant switch DC-DC converter. **[8]**

b) What are advantages and disadvantages of resonant converters? **[8]**

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. **[10]**

OR

Q6) a) Compare offline and online UPS. **[6]**

b) Explain the operation of electronic ballast with the help of block diagram. **[6]**

c) Compare HVAC and HVDC transmission. **[6]**

Q7) a) State advantages, disadvantages and applications of PV. **[4]**

b) Explain with block diagram grid connected PV system. **[6]**

c) Distinguish between horizontal axis wind turbine generator and vertical axis wind turbine generator. **[6]**

OR

Q8) a) What is meant by MPPT? Explain in brief analog and digital methods used for MPPT. **[4]**

b) Explain with the help of neat diagram application of standalone PV system. **[6]**

c) Explain in brief isolated grid supply system with multiple wind turbines. **[6]**

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