TE-EE.
Sem V (CBSGS)
PET

10/12/2014.

QP Code : 14967

Duration: - Three Hours   Total Marks assigned to the paper: - 80

Instructions to the candidates, if any: -

Note:
- Question No. 1 is compulsory.
- Answer any **three** from the remaining five questions.
- Assume suitable data if necessary and justify the same.
- Figures to the right indicate the marks.

20M

Q1   Each question carry five marks.

a   List the advantages and disadvantages of Current source inverter over Voltage source inverter.

b   Once SCR is triggered, gate loses its control. Why?

c   What is a DC-DC converter? List few applications of it.

d   What problem is caused by sharp single pulse triggering in a single phase AC voltage controllers when the load is inductive? How can this be solved?

Q2   a   Explain the concept of space vector modulation.   05M

b   Compare the properties of power BJT, power MOSFET and IGBT   05M

c   Explain with relevant circuitdiagrams and waveforms the working of a single phase   10M
bidirectional phase control type AC voltage controllers connected to R load and obtain
a relationship between the r.m.s. output voltage and ther.m.s. input voltage.

Q3   a   Draw a neat circuit and explain the working of full wave fully controlled 6-pulse 3ϕ 10
bridge circuit with resistive load. Draw the corresponding input and output voltage
waveforms when the firing angle α=90°.

b   A single phase full wave fully controlled bridge rectifier is operated with an R-L load.   10
Calculate average D.C. output voltage, input power factor, displacement factor and
Total Harmonic distortion, if a 50 Hz. Sinusoidal voltage of 220 V. peak is applied.

10

Q4   a   Explain with a neat circuit diagram and relevant waveforms, the working of a boost
regulator and derive the expression for output voltage, filter capacitance and filter
inductance.

TURN OVER