Total No. of Printed Pages:2

SUBJECT CODE NO: H-1613
FACULTY OF SCIENCE AND TECHNOLOGY
M.E. (Electrical Power Electronics)
Advanced Power Electronics
(REVISED)

[Time: Three Hours] [Max.Marks:80]

Please check whether you have got the right question paper.

N.B
    i.   Solve <u>any two</u> questions <u>from each section</u>.
    ii.   Use suitable data if required.

Section A

Q.1
a) With neat diagram and waveforms, explain the control characteristics of GTO.   05

b) Discuss the switching characteristics of IGBT with the help of neat circuit diagrams & waveforms.   10

c) Explain the switching characteristics of MOSFET. Draw its transient model.   05

Q.2
a) Show that the performance of a three phase full converter as influenced by source inductance is given by the relation: $\cos(\alpha + \mu) = cos\alpha - \frac{WL_s Id}{E_m}$ 10

Where:
α = ring angle
μ = overlap angle
L_s = source Impedance
Id = load current
E_m = peak value of source voltage
W = angular frequency (rad / Sec)

b) What is the principle of phase control? Also derive the performance parameters of a single phase full wave a.c. controller with RL load.   10

Q.3 Write short Notes <u>on any two</u>:-   20
   i)   Dual converter
   ii)   Effect of source and load inductances on voltage – controllers
   iii)   Principle of operation of Boost converter

Section B

Q.4 With the help of neat circuit diagram and waveform, explain the operation of transistorized three phase Bridge inverter with resistance load in **180°** conduction mode.   20

Q.5
a) Write the drawback of SPWM. Also describe and suggest other techniques offering improved performance with waveforms.   10

b) Explain the operation of ZVS: resonant converter   10

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Q.6   Write short notes on <u>any two</u>:   20
i)   Operation of resonant DC link inverter.
ii)   Load commutated inverters
iii)   Working principle of single phase CSI.