Total No. of Printed Pages:2
SUBJECT CODE NO: H-1613
FACULTY OF ENGINEERING AND TECHNOLOGY
ME (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) State the various types of turn – on methods of SCR. Which is the universal method? Why? 10

b) What are the peripheral effects of power electronics system? Suggest methods to mitigate the same. 05

c) With neat diagram and waveforms, explain the control characteristics of IGBT. 05

Q.2 a) Explain the principle of ON – OFF and phase control of Ac voltage regulators. 10

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

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

Q.3 Write short Notes on <u>any two</u>:- 20

    i) Principle of operation of Buck converter.
    ii) Six pulse circulating current conducting Dual converter
    iii) Methods of power factor improvement in controlled rectifiers

Section B

Q.4 a) Describe in detail the techniques for optimizing the base drive of a BJT. 10

b) Explain the operation of six – step inverter and obtain the expression for output voltage in terms of d.c. supply voltage Vd, with the help of neat diagram. 10

Q.5   a) Draw and explain the various types of zero current switch topology.   10

         b) What is resonant converter? Explain the operation of parallel resonant converter.   10

Q.6   a) Explain with neat circuit diagram and waveform the operation of full bridge ZVS PWM converter.   10

         b) Explain the circuit operation and equivalent circuits of series resonant inverter.   10