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FACULTY OF ENGINEERING & TECHNOLOGY
M.E (Electrical Power Systems)Year Examination - June- 2015
Advanced Power Electronics
(Revised)

[Time: Three Hours]

[Max. Marks:80]

“Please check whether you have got the right question paper.”

- i) Answer any two questions from section A and any two questions from section B.
ii) Assume suitable data, if required.

SECTION-A

- Q.1 a) With neat diagram and waveforms explain control characteristics of i)GTO ii)IGBT 10
b) What are the peripheral effects of power electronic systems? Suggest methods to mitigate the same. 05
c) Explain switching characteristics of MOSFET. Draw its transient model. 05
- Q.2 a) Explain the principle of ON-OFF and phase control of AC voltage regulators 08
b) With the help of circuit diagram and wave forms explain the operation of single phase AC voltage controller with R-L load . Derive the expression for output voltage . 12
- Q.3 Write notes on any two : 20
a) Six pulse circulating current conducting Dual-converter
b) Common Applications of Choppers
c) Control Techniques for power factor Improvement in converters
d) Effect of source and load inductances on voltages –controllers

SECTION-B

- Q.4 a) With the help of diagram explain the operation of six- step inverter and obtain the expressions for output line voltage in terms of d.c supply voltage V_d . Also obtain the expressions for line-to-line output voltages & comment on the nature of current wave .
b) Explain the operation and application of resonant d.c. link inverter . 08
- Q.5 a) Draw the output line voltage waveforms for a three –phase bridge inverter operating in 180° conduction mode. Derive the fourier series for the line voltage . 10
b) A 3-phase inverter is operating in 180° conduction mode . find out the following i) The rms value of the n^{th} harmonic line voltage. 2) the rms value of the fundamental component of the line voltage 10
- Q.6 Write notes on any two : 20
a) Current –source inverters
b) Resonant D.C Link inverters
c) PWM techniques for voltage source inverters .
d) Load commutated inverters