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Register Number
Name of the Candidate:

M.Sc. DEGREE EXAMINATION, May 2015

(ELECTRONIC SCIENCE)

(SECOND YEAR)

610: POWER ELECTRONICS AND CONTROL SYSTEMS

Time: Three hours Maximum: 100 marks

SECTION-A **(5×4=20)**

Answer any FIVE questions

1. Explain the switching characteristics of SCR during Turn-Off.
2. Give a comparison between insulated Gate Bipolar Transistor (IGBT) and a power MOSFET.
3. What are the different types of controlled rectifier? What are applications of it ?
4. Write a note on PSPICE simulation of simple rectifier circuits.
5. Briefly explain the principle of chopper operation.
6. List a few industrial applications of inverters.
7. Write short notes on i)UPS and ii)SMPS
8. Explain the construction detail of synchros with suitable diagrams.

SECTION-B **(5×16=80)**

Answer any FIVE questions

9. i) Describe the operation of the series connected SCRs.
   ii) Write a note on cooling and protection of SCR.
10. Describe the working of an insulated Gate Bipolar transistor. Enumerate same applications of IGBTs.
11. Explain the operation of single phase half wave controlled rectifier with RL load.
12. Draw and explain the operation of three phase fully controlled bridge rectifier.
13. Draw the circuit of a basic series inverter and give the sketch of current and voltage waveforms of it. Explain the operation of it in three different modes.
14. Describe the operating principle of single phase to single phase step- up cyclo converter with the help of midpoint and bridge type configurations.
15. Explain in detail the solid tap changes using anti-parallelSCRs.
16. Give the construction and working of
    i) DC Tachogenerator and
    ii) AC Tachogenerator

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