Con. 7061-13. **LJ-11413**

(3 Hours) **[Total Marks : 100**

N. B. : (1) Question No. **1** is **compulsory**.
(2) Solve any **four** questions out of remaining **six** questions.
(3) **Each** question is for **20** marks.
(4) Assume suitable data if necessary.

1. Solve any **four**:– **20**
   (a) State and explain the application of controlled rectifier and inverter.
   (b) Explain V-I characteristics of SCR.
   (c) Compare R and RC triggening techniques for SCR.
   (d) What is the principle of ON-OFF control of AC voltage controller.

2. (a) Explain in detail the different methods of tunning - ON the SCR. **10**
   (b) Explain PWM technique to control the output voltage of single phase inventer. **10**

3. Explain the working of single phase fully controlled bridge conventer with relavent varefiering for α - 120°. Derive expression for average output voltage as a function of jining angle. **20**
   Also explain (i) Rectifing mode
   (ii) Invension mode

4. (a) Discuss the different methods of Harmonic reduction. **10**
   (b) Draw and explain 3∅ bridge inverters where 3 switches conduct together. **10**

5. (a) Draw the circuit diagram of back-boost regulator with relavant wareforms. Derive the expression for output voltage. **12**
   (b) Explain with circuit diagram single phase cyclo-converter. **8**

6. (a) In a step down chopper I/P is 200V, O/P voltage required is 600V. If the conducting time of switch is 200 μsec, compute the chopping frequency. **8**
   (b) Explain the following:– **12**
   (i) Latching and holding cument
   (ii) di/dt and dv/dt rating of SCR
   (iii) Snubber circuit.

7. Write short notes on any **three** of the following:– **20**
   (i) Two tranmistir analogy of SCR
   (ii) 1∅ AC phase controller
   (iii) Dynamic characteristics of SCR
   (iv) Power MOSFET.
   (v) Protection circuit of SCR.
