

(3 Hours)

Total Marks: 80

- N. B. 1) Question No. 1 is **compulsory**.  
 2) Answer any **3** questions from the remaining **5** questions.  
 3) Assume suitable data wherever necessary.
- Q1 Solve any four 20  
 (a) Compare SCR, IGBT with various parameters.  
 (b) Write protection scheme for over voltage for SCR.  
 (c) Explain how choice of a drive can be made.  
 (d) Write down merits and demerits of series inverter.  
 (e) Mention various triggering methods for SCR and explain any one.
- Q2 (a) Explain fan regulator with diac-triac scheme. 20  
 (b) Explain Buck converter. Derive the expression for the selection of inductor.
- Q3 (a) What is commutation of SCR? Explain Class C type of commutation with waveforms. 20  
 (b) Explain the current fed AC drives & state its application.
- Q4 (a) Explain PWM full bridge inverter. 20  
 (b) Explain half controlled rectifier with R load and derive the expression for R.M.S average voltage.
- Q5 (a) Explain the principal of step up/down chopper with help of circuit diagram & waveforms. 20  
 (b) Explain variable frequency control drive for AC motor.
- Q6 (a) Draw and explain single phase step up cycloconverter. 20  
 (b) Draw and explain operation of four quadrant DC drives.