Sem VI / Power Electronics & Drives / INST / 18-05-15

QP Code : 5077

(3 Hours) **[Total Marks : 80**

N.B. : (1) Q. **no.1** is **compulsory**
(2) Solve any three from the remaining
(3) Assume suitable data wherever required.

1. Solve any **four** **20**
   (a) Compare SCR , IGBT , with various parameters.
   (b) Explain UJT with basic construction.
   (c) Write a short note on brushless DC motor.
   (d) Write a protection scheme for over voltage for SCR.
   (e) Compare series and parallel inverter.

2. Solve the following.
   (a) List out various triggering methods of SCR. Explain RC triggering of SCR with diagram. **10**
   (b) What is commutation of SCR ? Explain class C type of commutation with neat waveforms. **10**

3. Solve the following.
   (a) Explain asymmetric semiconverter along with waveforms for $\alpha = 45^0$. **10**
   (b) Explain fan regulator with diac-triac scheme. **10**

4. Solve the following.
   (a) Draw and explain H-Bridge inverter, with neat waveforms, using IGBT. **10**
   (b) Explain series inverter. Write down its merits and demerits. **10**

5. Attempt following questions.
   (a) Explain Buck converter. Derive the expression for selection of inductor. **10**
   (b) Explain working principle of induction heating. Give example and write down its merits and demerits. **10**

6. Solve the following.
   Design an AC power control for firing angle of 90^0 to supply ac voltage to a resistive load of 10 Ω from 230 v , 50 H_z mains supply. Use SCR- UJT circuit. No temp. compensation resistor is required. (Use UJT 2N 2646) **20**
