

N.B: (1) Question No 1 is compulsory

(2) Attempt any three questions from the remaining five questions.

(3) Answers to the questions should be grouped and written together.

(4) Assume suitable data wherever necessary and justify it.

(5) Draw neat circuit diagram and waveforms wherever applicable.

1. Answer any five of the following:

a) Differentiate between power BJT and power MOSFET. (20)

b) State true or false- Single phase Induction motors are not self-starting. Justify

c) Describe any six ratings of SCR.

d) Explain servo motors in detail.

e) What is an inverter? Explain its classification

f) Explain the power stages in Induction motor.

2. a) Explain 180 degree mode for 3 phase inverter. (10)

b) Explain the construction and working of shaded pole induction motor (10)

3 a) Explain the characteristics of DC shunt motor and DC series motor. (10)

b) Explain latching of IGBT. (10)

4. a) Explain the working of 3phase induction motor. Also explain the torque slip characteristics of the motor. (10)

b) Explain full controlled bridge rectifier using RL load. (10)

5. a) Explain relaxation Oscillator using UJT. (10)

b) A 4 pole, 3 phase induction motor operates from a supply whose frequency is 50Hz. Calculate: (05)

i) the speed at which the magnetic field of the stator is rotating.

ii) the speed of the rotor when the slip is 0.04.

iii) the frequency of the rotor current when the slip is 0.03.

iv) the frequency of the rotor current at standstill.

c) Determine the developed torque and the shaft torque of 220V, 4 pole series motor with 800 conductors wave connected supplying a load of 8.2KW by taking 45A from the mains. The flux per pole is 25m Wb and its armature circuit resistance is 0.6 ohms. (05)

6. Write short notes on any two of the following (20)

a) Chopper and explain any one of its types

b) Single phase full converter Drives for DC motor

c) Firing circuit for TRIAC using DIAC

d) Stepper motor