T.E. Electrical V CBGS

E.M-I (3 Hours)

Q. P. Code : 584100

[Total marks: 80]

Note: (1) Question No. 1 is compulsory.
  (2) Attempt any three questions out of remaining five question.
  (3) Assume suitable data if required.

1. Solve any four each carry equal marks. 20
   (a) Explain connection and phasor diagram of Yd 11 transformers.
   (b) Explain the operating principle of three phase induction motor.
   (c) Explain capacitor start single phase I.M.
   (d) Explain need of parallel operations of transformers and write necessary condition for parallel operation.
   (e) Draw and explain torque slip characteristics of 3 phase i.M.

2. (a) Explain the switching-in transient phenomenon in phase transformer. 10
   (b) Two three phase transformers rated at 500 KVA and 450 KVA respectively 10
       and connected in parallel to supply a load of 1000 KVA at 0.8 PF lagging. The
       per phase leakage resistance and reactance of the first transformer is 2.5%
       and 6% respectively and of second transformer 1.6% and 7% respectively.
       Calculate the KVA load and PF at which each transformer operates.

3. (a) Explain with a neat diagram cogging and crawling phenomenon in 3 phase I.M. 10
   (b) A three phase I.M. having 6 pole star connected stator winding runs on 240v 10
       50 Hz supply. The rotor resistance and standstill reactance are 0.12 and 0.85
       per phase. The ratio of stator of rotor turns is 1.8 and F.L. slip is 4%. Calculate
       the developed torque at F.L. maximum torque and the speed at maximum
       torque

4. (a) Explain the need of starter for 3 phase I.M. and explain auto-transformer 10
       starter in detail.
   (b) A 15 kW 400V, 4pole, 50Hz 3 phase star connected I.M. give the following 10
       test result

	Line current (A)	Power i/p (w)	Line voltage (v)
NL. test	9	1310	400
Blocked rotor test	50	7100	200

Assume stator and rotor ohmic losses are equal at standstill. Draw circle
diagram and find line current, power factor, slip, torque and efficiency at F.L.

TURN OVER

5.   (a) Draw equivalent circuit diagram of single phase I.M. based on double field   10
         revolving theory and explain the double field revolving theory.

  (b) Explain shaded pole 1 phase I.M. in detail.   10

6.   Write short note on any two   20

  (a) Scott connection of two 1 phase transformers.

  (b) Induction generator.

  (c) Power flow in 3 phase I.M.

****

or