SE/EE/Sem-IV CBSGS / EM-I 25/5/16

Q.P. Code : 543802

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

N.B. : (1) Question **No.1** is **compulsory**.
(2) Attempt **any THREE** from the remaining questions.
(3) **Figures** to the **right** indicate **full marks**.

1. Attempt **any Four** questions :
   (a) What are the advantages of auto transformer over two winding transformer. **5**
   (b) How the losses can be minimise in case of single phase transformer? **5**
   (c) What is Electromechanical Energy Conversion? **5**
   (d) Which speed control methods are used to get the speed above normal and below normal in case of DC Motor? **5**
   (e) List the advantages of Hopkinson's test. **5**

2. (a) Derive the expression for torque developed in singly excited system. **10**
   (b) 5 kVA, 200 / 400 V, 50 Hz single phase transformer gave following test result. **10**

   O.C. Test : 200 V, 0.9 A, 60 W (L. V. Side)
   S.C. Test : 10 V, 6 A, 22 W (H. V. Side)

   Calculate :
   (i) Efficiency and voltage regulative at full load 0.8.
   (ii) Efficiency at 25% load at unity p.f.

3. (a) Explain the different electrical braking methods for separately excited DC Motor. **10**
   (b) Two single phase transformer with equal voltage ratio having impedance of (0.819 + j 2.503) Ω and (0.8 + j 2.31) Ω with respect to secondary. If they operated in parallel how they will share the load of 3000 kw at p.f. 0.9 lagging. **10**

TURN OVER

4. (a) ---- **10**

(b) A conductor of 4 m length moves under a magnetic field of flux density of 1.3 wb/m2 with velocity of 1.3 m/s calculate the magnitude of induced e.m.f. if conductor moves **10**

(i) An angle of 50° to direction of field and

(ii) At 90° to axis of field.

5. (a) Explain commutation in DC machine also explain the various methods of the improvement. **10**

(b) Explain the characteristics of DC series and shunt motors. **10**

6. (a) Draw and explain four point starter. **10**

(b) Derive the expression for calculation demagnetising ampere turns per pole and cross magnetisly ampere turns per pole. **10**