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SE Electrical IV CBSGS

EM-I

08.12.16

Q.P. Code : 543801

(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) Explain, how the core flux set up in transformer is maintain constant from no load to full load. **5**
   (b) What is the condition at which transformer will have maximum efficiency. **5**
   (c) Briefly explain the power stages in DC Motor. **5**
   (d) What is the necessity of starter in DC Motor. **5**
   (e) Briefly explain the energy balance equation. **5**

2. (a) Derive the expression to obtained ATd/pole and ATc/pole in case of armature reaction. **10**
   (b) Derive the expression for torque developed in singly excited magnetic field. **10**

3. (a) Draw and explain the working of three point starter. **10**
   (b) Explain the Electrical braking methods for separately excited DC Motor. **10**

4. (a) Explain the process of commutation and mention the methods to improve the commutation. **10**
   (b) Design the resistance of sections of eight stud starter for 100 h.p., 500 V shunt motor. The armature current should not exceed 1.5 the full load armature current. The motor full load efficiency is 94%. The total copper losses are 3.7% of input and shunt field resistance 250Ω. **10**

5. (a) Draw and explain the O.C. and S.C. test on I phase transformer and hence obtain the equivalent circuit diagram. **10**

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(b) A 650 KVA single phase transformer with 0.12 p.u. resistance and 0.06 p.u. reactance is connected in parallel with a 300 KVA transformer with 0.014 p.u. resistance and 0.045 p.u. reactance to share a load of 800 KVA at 0.8 pf lagging. If the transformers are having common voltage ratio, calculate the load shared by each of them. **10**

6. Write Short Notes on : **20**

(i) Doubly excited magnetic field

(ii) Copper saving in Auto Transformer.
