3E1645

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B.Tech. III Sem.(Main/Back) Examination, Dec. - 2016
Electrical Engg.
3EE5A Electrical Machines - I
EE,EX

Time : 3 Hours **Maximum Marks : 80**
Min. Passing Marks : 26

Instructions to Candidates:

*Attempt any **five** questions, selecting **one** question from **each unit**. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

Unit - I

1. Explain following in reference to magnetic circuits in detail.

a. Magneto motive force

b. Magnetic field strength

c. Permeability

d. Reluctance **(4×4)**

OR

1. a) Give basic principle of electromechanical energy conversions. **(8)**

b) Explain the concept of energy balance and energy stored in magnetic field. **(8)**

Unit - II

2. a) Explain Demagnetizing and cross magnetizing ampere turns in detail. **(12)**

b) Give various characteristics of shunt generators. **(4)**

OR

2. a) Explain Communication and armature reaction in DC generators. **(12)**

b) Give various characteristics of series generators. **(4)**

Unit - III

3. Give principals of D.C. motors also explain the concept of back emf end torque of motor in detail. **(16)**

OR

3. Give various methods for speed control in D.C. motors in detail. **(16)**

Unit - IV

4. a) Explain the concept of no load and short circuit test in transformer in detail. **(8)**

   b) Explain the process of finding efficiency of transformer by Semphis test. **(8)**

OR

4. Explain following in relevant to transformer

   a. Efficiency

   b. Condition for maximum efficiency

   c. All day efficiency

   d. Welding transformer **(4×4)**

Unit - V

5. a) Explain in detail the double star connection for obtaining 6 - phas supply from 3 - phase supply. **(10)**

   b) Explain open delta connections for polyphase transformer. **(6)**

OR

5. Write short notes on :

   a. Three winding transformers **(8)**

   b. Switching currents in transformers **(8)**