

Roll No. _____

[Total No. of Pages : 2]

3E1645**3E1645****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.

- Magneto motive force
- Magnetic field strength
- Permeability
- Reluctance

(4×4)**OR**

- 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

- a) Explain Demagnetizing and cross magnetizing ampere turns in detail. **(12)**
b) Give various characteristics of shunt generators. **(4)**

OR

- a) Explain Commutation 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 and 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. rtuonline.com (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)

