4E2111

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B. Tech. (Sem. IV) (Main / Back) Examination, June/July - 2013
4EE3
Electrical Engg. (Machines-II)

Time : 3 Hours] [Total Marks : 80
[Min. Passing Marks : 24

*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 fell missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)

1. NIL 2. NIL

UNIT - I

1 (a) Explain the phenomena of general equation of inducted EMF in an Electrical Machines. 8

(b) By help of neat diagram explain concentric and distributed type winding in a Electrical Machine. 8

OR

1 (a) Explain Armature and field mmf in AC machines also explain its rotating fields. 8

(b) Describe effect of power factor and current on armature mmf in AC machine. 8

UNIT - II

2 (a) The starting and maximum torques of a 3ϕ induction moter moor are 1.5 times and 2.5 times its full load torque det the percentage change in rotor circuit resistance to obtain a full load slip of 0.03. Neglect stater impedance. 8

(b) Explain equivalent circuit diagram of induction motor, also explain its torque equation and torque-slip curves. 8

OR

2 (a) Explain a Double Cage induction motor. Explain Cogging and Crawling in induction motor. 8

(b) A746kW, 3ϕ, 50Hz, 16 pole induction motor has a rotor impedance of $(0.02 + j0.15)\Omega$ at stand still full load torque is obtained at 360 rpm calculate

(i) Ratio of max to full load torque

(ii) Speed for maximum torque

(iii) The rotor resistance to be added to get max. starting torque 8

UNIT - III

3 (a) Explain starting and speed control of a squirrel Cage Induction motor. 8

(b) Explain by help of neat diagram about Cascade connection in Induction motor. 8

OR

3 (a) Calculate the reduction in starting current and starting torque when the supply voltage to a cage rotor motor is 80 percent instead of 100 percent. 8

(b) Explain starting and braking method of slip ring motor. 8

UNIT - IV

4 (a) Explain Construction, excitation and principle system of Synchronous Generator. 8

(b) Describe phenomena OC and SC tests in Synchronous generator. 8

OR

4 (a) Explain zero power factor characteristics and concept of polier tiangle in Synchronous generator. 8

(b) Explain Synchronization and parallel operation in Synchronous generator. 8

UNIT - V

5 (a) Describe with help of principle, construction and phases diagram about a Synchronous motor. 8

(b) Explain the concept of Synchronous condenser and method of find and uses of V curves in Synchronous motor. 8

OR

5 (a) Explain Synchronous induction motor. 8

(b) Write short note on :

(i) Starting method of synchronous motor.

(ii) Power factor control of Synchronous motor. 8
