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BIEE-028

DIPLOMA IN ELECTRONICS AND COMMUNICATION ENGINEERING (DECVI)

00934

Term-End Examination

June, 2011

BIEE-028 : ELECTRICAL MACHINE THEORY-II

Time : 2 hours *Maximum Marks : 70*

Note : *Attempt **any five** of the following questions.*

1. Answer **true** or **false** of the following statements. **7x2=14**

(a) In a synchronous machine, the stator frame is made of cast iron. (True/False)

(b) The field system of an alternator is usually excited at 1250/250 V dc. (True/False)

(c) Steam turbine has normally high rotating speed. (True/False)

(d) The salient pole type rotor has larger axial length. (True/False)

(e) A coil consist of two turn. (True/False)

(f) Concentrating winding has one coil per phase. (True/False)

(g) A coil of 150° pitch has 3^{rd} harmonic pitch factor as cos 45°. (True/False)

2. Explain the term coil span factor and distribution factor in connection with alternator armature winding and deduce the emf equation of an alternator in corporating the effects of these factors. 14

3. (a) Define voltage regulation of an alternator. Explain various factors which may affect the regulation of an alternator. 7

(b) Explain the construction and operation of 2 - pole synchronous motor. 7

4. (a) Describe with neat sketches the construction of a 3- phase cage type inductor motor. 7

(b) Deduce an expression for the frequency of rotor current in an induction motor. 7

5. (a) Why starters are necessary for starting induction motor ? Name different starting methods for 3-ϕ induction motors. 7

(b) The rotor resistance and stand still reactance per phase of a 3-ϕ slip ring induction motor are 0.05 Ω and 0.1 respectively. What should be the value of external resistance per phase to be inserted in the rotor circuit to give maximum torque at starting ? 7

6. Name the methods of speed control of 3-phase Induction motors. Explain any two methods in detail. **14**

7. (a) Describe the construction and working of a shaded pole motor. **7**

   (b) Describe the construction and working of a split phase induction motor. **7**

8. Attempt ***any four*** of the following : **3½x4=14**

   (a) Calculate the stepping angle for a 3 stack 16 tooth variable reluctance motor

   (b) Linear induction motor. Explain.

   (c) Write about stepper motor

   (d) Explain servo motor.

   (e) Write the nature of field produced in 1-ϕ induction motor.

   (f) Write the application of 1-ϕ induction motor.