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BIEE-028

00371

ADVANCED LEVEL CERTIFICATE COURSE IN ELECTRICAL ENGINEERING/DIPLOMA IN ELECTRONICS AND COMMUNICATION ENGINEERING (DELVI/ACELVI)

Term-End Examination

December, 2012

BIEE-028 : ELECTRICAL MACHINE THEORY-II

Time : 2 hours *Maximum Marks : 70*

Note : *Q No. **1** is **compulsory**. Attempt **any four** from Q **2** to Q **8**. Each Question is of **14** marks. Use of scientific calculator is allowed.*

1. (a) In a double cage induction motor, the inner cage has : **7x2=14**

(i) Low R and Low X

(ii) Low R and high X

(iii) High R and high X

(iv) High R and Low X

(b) At low slip, Torque is directly proportional to slip S in a 3 phase induction motor. (T/F)

(c) The ratio between rotor input, rotor output and rotor copper losses is 1: (1 – s) : S. (T/F)

(d) A synchronous motor is said to be "floating" when it operates on no load and without losses. (T/F)

(e) For under excited operation of a synchronous motor the p.f will be lagging. (T/F)

(f) In alternator, field winding is on stator. (T/F)

(g) Steam turbine has normally high rotating speed. (T/F)

2. A 1000 kVA, 6.6 kV, 50 Hz, Y-connected synchronous generator has a no-load voltage of 11.4 kV at a certain field current. The generator gives rated terminal voltage at full load 0.75 lagging factor at the same field current. Calculate : **14**

(a) Synchronous reactance (armature resistance being negligible)

(b) Voltage regulation

(c) Torque angle

(d) Electrical power developed

(e) Voltage and kVA rating if generator is reconnected in delta.

3. (a) Why starters are necessary for starting induction motor ? **7**

(b) Name different starting methods of 3-ϕ induction motors. **7**

4. Explain what is meant by stand still reactance of induction motor rotor ? How does it vary with speed ? **14**

5. (a) Give reasons for low efficiency of hysteresis and reluctance motors. **2x7=14**

   (b) What is advantage of a capacitor start motor over a resistance split phase motor ?

6. (a) What is damper winding ? What is the function of it and where it is located ? **2x7=14**

   (b) What is a distributed winding and what is distribution factor ?

7. (a) What are servomotors and list their characteristics ? **2x7=14**

   (b) State the various applications of a stepper motor.

8. Attempt ***any four*** of the following. Write short notes on : **4x3.5=14**

   (a) Power flow diagram of an induction motor.

   (b) Cause of low power factor of induction motors.

   (c) Torque slip characteristics of 3ϕ induction motor.

   (d) Cause of hunting and its prevention.

   (e) Synchronizing an alternator with bus bars.

   (f) Synchronous condensers.
