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**BIEE-028**

# DIPLOMA IN ELECTRICAL ENGINEERING (DELVI) / ADVANCED LEVEL CERTIFICATE COURSE IN ELECTRICAL ENGINEERING (ACELVI)

## Term-End Examination

00743

## December, 2016

## BIEE-028 : ELECTRICAL MACHINES THEORY – II

*Time : 2 hours* *Maximum Marks : 70*

***Note :*** *Attempt any **five** questions. All questions carry equal marks. Use of scientific calculator is permitted.*

**1.** (a) Explain the constructional features of a squirrel cage 3-phase induction motor. 7

(b) State the effects of increasing rotor resistance on starting current and full load slip of an induction motor. 7

**2.** (a) A 3-phase, 6-pole, 50 Hz induction motor has a slip of 1% at no-load and 3% at full load.

Find : 7

(i) Synchronous speed

(ii) No-load speed

(iii) Full load speed

(iv) Frequency of rotor current at standstill

(v) Frequency of rotor current at full load

(b) Draw and explain the torque – slip characteristic of a three-phase induction motor. 7

3. (a) Discuss the synchronous impedance method for determination of voltage regulation of an alternator. 7

(b) A 3-phase star-connected alternator is rated at 1500 kVA, 12000 V. The armature effective resistance and synchronous reactance are 2 Ω and 35 Ω respectively per phase. Calculate the percentage regulation for a load of 1200 kW at a power factor of

(i) 0·8 lagging, and

(ii) 0·8 leading. 7

4. (a) Explain the speed control methods of a 3-phase induction motor. 7

(b) Explain the working of a synchronous motor as a synchronous condenser. 7

5. (a) Explain why the starting torque of a capacitor start induction run motor is better than that of a split phase induction motor. 7

(b) Describe the construction and operation of a universal motor. 7

6. (a) What is a servo motor ? Enumerate its advantages and applications. 7

(b) List the applications of (i) reluctance motor, and (ii) stepper motor. 7

7. Write short notes on any ***two*** of the following : *2×7=14*

(a) Autotransformer Starter for Three-phase Induction Motor

(b) Linear Induction Motor

(c) Hunting in Synchronous Motor