

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

Term-End Examination

June, 2016

00385

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 calculators is permitted.*

1. (a) Explain the principle of operation of the three-phase induction motor. 7
- (b) State the effects of increasing rotor resistance on starting torque and maximum torque of a three-phase induction motor. 7

2. (a) What are the functions of a starter in induction motor ? Explain the construction and working of DOL starter. 7

- (b) In a 6-pole, 3-phase, 50 Hz induction motor with star-connected rotor, the rotor resistance per phase is 0.3Ω , the reactance at standstill is 1.5Ω per phase, and e.m.f. between the slip rings on open circuit is 175 V. Find : 7
- (i) Slip at a speed of 950 r.p.m.
 - (ii) Rotor e.m.f. per phase.
 - (iii) Rotor frequency and reactance at a speed of 950 r.p.m.
3. (a) Give reasons for the following : 7
- (i) Generally cylindrical rotor construction is used for high speed and salient pole construction for low speed synchronous machines.
 - (ii) The speed of a synchronous generator should be kept constant at synchronous speed.
- (b) What is the necessity of parallel operation of alternators ? State the conditions for parallel operation of alternators. 7
4. (a) Explain the differences between a synchronous motor and an induction motor in detail. 7
- (b) Explain the purpose of using damper windings in a synchronous machine. 7

5. (a) Write short notes on any *two* of the following : $2 \times 3 \frac{1}{2} = 7$
- (i) Crawling and Cogging
 - (ii) V-curves of Synchronous Motor
 - (iii) Synchronous Condenser
- (b) Explain the construction, operation and characteristic of split phase induction motor. 7
6. (a) Describe the construction and operation of a shaded pole induction motor. 7
- (b) What is a stepper motor ? Enumerate its advantages and applications. 7
7. (a) Describe the constructional details of linear induction motor. 7
- (b) Discuss the merits and demerits of servo motors. 7
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