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Question Paper Code : 11293

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2026.

Fourth Semester

Electrical and Electronics Engineering

EE3405 – ELECTRICAL MACHINES– II

(Regulations 2021)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. Why stationary armature and revolving field system is preferred for large synchronous generators?
2. What is the effect of armature reaction on the induced emf of an alternator?
3. Why a synchronous motor is not a self-starting motor?
4. Name different methods of starting a synchronous motor.
5. Write the parameters determine the torque of a 3 phase induction motor?
6. What is meant by heat run test in 3 phase Induction motor?
7. Which type of induction motor is having high starting torque? and why?
8. What is meant by regenerative braking in induction motor?
9. List out the applications of servo motor.
10. What is a linear induction motor?

PART B — ($5 \times 13 = 65$ marks)

11. (a) Explain the ZPF method of finding out the voltage regulation of an alternator.

Or

- (b) Explain

- (i) Three Dark Lamps (5)
- (ii) Two Bright and one Dark Lamp methods of synchronizing the alternators. (8)

12. (a) Explain the working principle, construction and operation of Synchronous motor with neat diagram.

Or

- (b) Explain how a synchronous motor works as a synchronous condenser.

13. (a) Explain the working principle, construction and operation of three phase induction motor.

Or

- (b) Explain the no load and blocked rotor test in three phase Induction motor.

14. (a) Explain the rotor rheostat starter of 3 phase Induction motor with neat sketch.

Or

- (b) Briefly discuss the dynamic braking and plugging in three phase induction motor.

15. (a) Discuss the double field revolving theory with neat diagram.

Or

- (b) Discuss the operation of a stepper motor and repulsion motor.

PART C — (1 × 15 = 15 marks)

16. (a) A single-phase 100 kVA, 600V, 50 Hz alternator has effective armature resistance and leakage reactance of 0.072Ω and 0.18Ω respectively. At rated terminal voltage and kVA load, determine internal induced emf at

- (i) unit p.f.
- (ii) 0.75 p.f. lagging;
- (iii) 0.75 p.f. leading.

Or

- (b) A three-phase star connected 1200kVA, 3300V, 50 Hz, alternator has armature resistance of 0.25Ω per phase. A field current of 40A produces a short circuit current of 200 A and an open circuit emf of 1100 V between lines. Calculate regulation on

- (i) full load 0.8 p.f lagging.
- (ii) full load 0.8 p.f leading.