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C23-EE–402

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BOARD DIPLOMA EXAMINATION, (C-23)

MARCH/APRIL—2026

DEEE – FOURTH SEMESTER EXAMINATION

ELECTRICAL MACHINES—II

Time : 3 hours] [*Total Marks* : 80

PART—A

3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. Define the slip and slip speed.

2. State the necessity of starters in induction motor.

3. Draw the torque slip characteristics of 3-phase induction motor.

4. List out any six applications of single-phase capacitor start type induction motors.

5. Define voltage regulation of an alternator.

6. Define distribution factor.

7. List any three advantages of short pitch coils in an alternator.

8. Write the conditions for operating the alternators in parallel.

9. State why the synchronous motor is not self-starting machine.

10. State how hunting is prevented.

PART—B

10×5=50

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criteria for valuation is the content but not the length of the answer.

11. Explain the operation of DOL starter with the help of neat diagram. 10

12. Explain the speed control of 3-phase induction motor by supply voltage and frequency control method. 10

13. Explain the working of stepper motor and list its different types. 10

14. *(a)* Compare the salient pole type and non-salient pole type alternator. 5

(b) Derive the e.m.f equation of alternator. 5

15. A 4-pole, 50Hz, star-connected alternator has 4 slots per pole per phase and 4 conductors per slot. The flux per pole is 0.12 Wb sinusoidally distributed. If the winding coil span is 150°, find the line value of induced e.m.f. 10

16. Explain the procedure of synchronization of alternators by using 3-dark lamp method. 10

17. Explain the working principle of synchronous motor. 10

18. Explain V and inverted V curves of synchronous motor with a neat sketch. 10

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