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C23-EE–302

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BOARD DIPLOMA EXAMINATION, (C-23)

MARCH/APRIL—2026

DEEE – THIRD SEMESTER EXAMINATION

ELECTRICAL MACHINES – I

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. Classify DC generators based on excitation.

2. State the function of commutator in D.C. generator.

3. Define torque in D.C. motor and write its equation.

4. List any three applications of D.C. shunt motors.

5. A 220 V, D.C. shunt motor has armature resistance of 0.6 Ω and current through armature is 10 A. Find the induced e.m.f. in the motor.

6. State the necessity of starter for D.C. motors.

7. State any three advantages and disadvantages of M.I. instruments.

8. Classify the resistances according to its value with examples.

9. Define transducer and write any three applications.

10. List any three advantages of digital instruments over analog instruments.

PART—B

10×5=50

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

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

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

11. Draw the equivalent circuits of DC shunt, series and compound generators and write voltage and current equations of each.

12. A shunt generator delivers 195 A at a terminal voltage of 250 V. The armature and shunt field resistances are 0.02 Ω and 50 Ω respectively. Find e.m.f. generated.

13. Plot the electrical and mechanical characteristics of *(i)* DC shunt motor and *(ii)* DC series motor.

14. Explain the working of 3-point starter with a neat sketch.

15. Explain the working of Permanent Magnet Moving Coil (PMMC) instrument with a neat diagram.

16. Explain the working of megger with a neat sketch.

17. Explain the construction of Linear Variable Differential Transformer (LVDT) with a neat sketch.

18. Explain the working of single-phase digital energy meter with a neat block diagram.

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