7246

C20-EE–302

7246

BOARD DIPLOMA EXAMINATION, (C-20)

OCTOBER/NOVEMBER—2024

DEEE – THIRD SEMESTER EXAMINATION

ELECTRICAL MACHINES—I (DC MACHINE)

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. Compare lap and wave windings in any three aspects.

2. State Fleming's right hand rule.

3. State the materials used for yoke, brushes and field winding in a DC generator.

4. Define armature reaction.

5. State the conditions for parallel operation of DC generator.

6. List the losses in a DC motor.

7. Classify the motors based on excitation.

8. State the factors that affect the speed of a DC motor.

9. State the necessity of speed control in a DC motor.

10. List different testing methods of DC motors.

PART—B

8×5=40

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

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

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

11. *(a)* Explain the working of single loop DC generator.

(OR)

(b) Explain the power stages in a DC generator.

12. *(a)* Derive an expression for demagnetizing ampere turns/pole and cross magnetizing ampere turns/pole.

(OR)

(b) Explain Armature reaction with neat sketches.

13. *(a)* Draw electrical and mechanical characteristics of DC shunt motor.

(OR)

(b) Derive the expression for torque developed in a DC motor.

14. *(a)* Explain different speed control methods for DC shunt motor.

(OR)

(b) Explain the working of 3-point starter with a neat sketch.

15. *(a)* Explain Swinburne's test on a DC motor with a neat sketch.

(OR)

(b) Explain the method of conducting brake test on A DC series motor.

PART—C

10×1=10

Instructions : (1) Answer the following question.

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

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

16. Will a DC series motor run on a AC supply? Discuss it.

★★★