

7246

BOARD DIPLOMA EXAMINATION, (C-20)
NOVEMBER/DECEMBER—2022
DEEE – THIRD SEMESTER EXAMINATION
ELECTRICAL MACHINES—I

Time : 3 hours]

[Total Marks : 80

PART—A

3×10=30

- Instruction :** (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. State the dynamically induced EMF.
2. State the functions of commutator in a DC generator and mention the material used.
3. Compare lap and wave windings in any three aspects.
4. Define armature reaction.
5. List any three applications of DC series generator.
6. List the different losses in a DC motor.
7. State Fleming's left hand rule.
8. List different methods of speed control of DC series motor.
9. Name the various starters used for DC motors.
10. List different methods of testing of DC motors.

- 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) Derive an equation for the EMF in a DC generator. A long DC shunt compound generator supplies a load of 50 A at 500 V. Its armature, series field and shunt field resistances are 0.05 Ω , 0.03 Ω and 250 Ω respectively. Calculate the generated voltage and the armature current.

(OR)

- (b) A DC shunt generator has a full load current of 195 A at 200 V. The stray losses amount to 700 W. The shunt field resistance is 50 Ω . If full load efficiency is 88%. Find armature resistance. Also find load current corresponding to the maximum efficiency.

- 12.** (a) Explain the open circuit characteristics of a DC shunt generator.

(OR)

- (b) What is meant by the armature reaction? How does it affect the main field flux?

- 13.** (a) Explain the significance of back EMF in DC motor.

(OR)

- (b) Explain the electrical characteristics of DC series motor.

- 14.** (a) Describe the working of a 3-point starter with a legible diagram.

(OR)

- (b) Explain any one method of speed control of DC series motor.

- 15.** (a) Explain the procedure brake test on DC shunt motor with a legible circuit.

(OR)

- (b) Explain the procedure of conducting Swinburne's test with a legible circuit.

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. How to reverse the direction of rotation of a DC shunt generator? What will happens discuss it?

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