

6238

BOARD DIPLOMA EXAMINATION, (C-16)

MAY/JUNE—2023

DEEE - THIRD SEMESTER EXAMINATION

DC MACHINES AND MEASURING INSTRUMENTS

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. List the materials used for yoke, armature winding and brushes in a DC generator.
2. State the function of split ring in DC generator.
3. List the applications of DC generators.
4. Draw the power flow diagram of DC motor.
5. List the methods of speed control of DC motor.
6. Write the functions of no volt release coil and overload release coil in 3-point starter.
7. List the types of secondary instrument.
8. What is meant by creep in an induction type energy meter? How it can be rectified?
9. State the precautions to be taken while using CT.
10. Write the advantages of digital instruments.

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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.** Explain demagnetizing effect of armature reaction in DC generator with neat sketches.
- 12.** Derive the e.m.f equation of DC generator.
- 13.** Derive the torque equation of a DC motor.
- 14.** (a) A 250 V DC shunt motor runs at 1500 rpm and takes an armature current of 65 A. The armature and field resistances are 0.3Ω and 240Ω respectively. Calculate the torque developed in the armature.
(b) Explain the speed control of DC series motor by flux control method with neat sketches.
- 15.** Explain how the efficiency of a DC motor is determined using the Swin Burne's test with neat circuit diagram and necessary equations.
- 16.** Explain the construction and working of permanent magnet moving coil instrument with a neat sketch.
- 17.** (a) Explain the working of synchroscope with a neat sketch.
(b) Explain the working of rectifier type ammeter.
- 18.** Explain the working of 1ϕ digital energy meter with a block diagram.

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