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C16-EE-302

**6238**

**BOARD DIPLOMA EXAMINATION, (C-16)**

**JUNE/JULY—2022**

**DEEE - THIRD SEMESTER EXAMINATION**

**DC MACHINES AND MEASURING INSTRUMENTS**

*Time : 3 hours ]*

*[ Total Marks : 80*

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**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 armature reaction.
2. Define commutation and state the methods to improve it.
3. A 4-pole machine running at 1500 r.p.m. has an armature with 90 slots and 6 conductors/slot. The flux per pole is 60 mWb. Determine the generated e.m.f. if the machine is connected in Lap winding.
- \* 4. List the losses in a DC motor.
5. What is the necessity of starter in a DC motor?
6. List the various methods of motor testing.
7. State any three advantages of moving iron instrument.
8. List any four errors occurred in a single phase energy meter.
9. What is creeping? How is it prevented in induction energy meter?
10. Compare digital and analog instruments in any three aspects.

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## PART—B

- 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. State the functions of each part of DC generator. 10
12. Derive the condition for maximum efficiency of a DC generator. 10
13. (a) Draw the curves of (i) torque vs current and (ii) torque vs speed for a DC series motor. 5  
(b) Derive torque equation of a DC motor. 5
14. (a) Explain the field control method of speed controlling the DC shunt motor. 5  
(b) Explain the power stages in DC motor. 5
15. Draw the schematic diagram of 4-point starter and explain its working. 10
16. Explain the construction and working of moving iron repulsion type ammeter with a neat sketch. 10
17. (a) Explain the method of extending the range of ammeters using shunts. 5  
(b) State the use of Tong tester. 5
18. Explain the working of rectifier type voltmeter with a neat sketch. 10

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