6238

BOARD DIPLOMA EXAMINATIONS

OCT/NOV-2019

DEEE– THIRD SEMESTER

DC MACHINES AND MEASURING INSTRUMENTS

Time:3 hours   Max. Marks:80

PART – A   **10X3= 30M**

Instructions: 1.   *Answer **all** questions.*
2.   *Each question carries five marks.*
3.   *Answer should be brief and straight to the point and shall not exceed five simple sentences.*

1.   Distinguish between lap and wave windings in any three aspects.

2.   State the materials used for YOKE, Brushes and field winding in a D.C. Generator.

3.   State any three applications of D.C. Generators.

4.   Calculate the value of torque established by the armature of a 4 pole motor having 774 conductors, two paths in parallel, 24mWb flux per pole, when the total armature current is 50A.

5.   What is the necessity of speed control of D.C motor.

6.   State any three advantages of Swinburne's test.

7.   What is creeping? How is it prevented in induction energy meters?

8.   State the advantages and disadvantages of moving coil instruments when compared to moving iron instruments in any three aspects.

9.   List the advantages of dynamometer type instrument.

10.   State any three uses of tong tester.

Instructions: 1. *Answer any **Five** questions*
                   2. *Each question carries **TEN** Marks.*
                   3. *Answer should be comprehensive and Criteria for Valuation is the content but not the length of the answer.*

11. A 6 pole dc shunt generator with 770 wave connected armature conductors and running at 500rpm supplies a load of 12.5Ω resistance at a terminal voltage of 250V. The armature resistance is 0.25Ω and field resistance is 250Ω. Find the armature current, the Generated emf and flux per pole.

12. Explain the phenomenon of Armature Reaction in D.C . Generator with neat sketches.

13. Derive the torque equation of DC motor.

14. a) A 4 pole 220 volt, Wave wound DC shunt motor has 180 conductors on its armature, the full load armature current is 30 A, and the flux per pole is 0.03wb. The armature resistance is 1.2Ω and the brush contact drop is 1V/brush. Calculate the full load speed of the motor.

    b) How do you control the speed of DC shunt motor by using the rheostatic control method?

15. Explain how brake test is conducted on a DC shunt motor with a neat sketch. Explain the merits and demerits of the test.

16. Explain the principle, construction and working of dynamometer type instrument with a neat sketch.

17. a) Explain the method of extending the range of voltmeter using high resistance in series with it.

    b) Write any five specifications of digital voltmeters.

18. Explain the working of rectifier type ammeter with a neat sketch.