



C09-EE-304

3242

**BOARD DIPLOMA EXAMINATION, (C-09)
OCTOBER/NOVEMBER-2018
DEE-THIRD SEMESTER EXAMINATION**

D.C. MACHINES & BATTERIES

Time : 3 Hours]

[Total Marks: 80

PART-A

3X10=30

- Instructions :**
1. Answer **All** questions.
 2. Each question carries **THREE** marks
 3. Answer should be brief and straight to the point

1. List the various parts of a D.C. generator.
2. State Flemings Right Hand rule.
3. List the applications of D.C. generators.
4. What are the conditions to build up voltage in a Self Excited Generator?
5. List the various losses in a D C Motor.
6. State the working principle of a D.C Motor.
7. Write the function of No-volt coil (NVC) and over load coil in a 3 point starter.
8. What is the necessity of speed control of D.C motors.
9. State the factors affecting capacity of the battery.
10. List the applications of Maintenance free batteries.

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Contd.,

PART-B

10X5=50

Instructions :

1. Answer any **five** questions. Each question carries **ten** marks.
2. Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer

11. A shunt generator delivers 150A at terminal p.d of 230 V. the armature resistance and shunt field resistance are 0.1Ω and 230Ω respectively. The iron and friction losses equal to 1500w. Find (i) EMF generated (ii) Copper losses (iii) Output of Prime Mover (iv) full load efficiency.
12. Explain the process of commutation with neat figures.
13. (a) Derive the Demagnetizing AT required to overcome demagnetizing effect.
(b) A 250v, 25KW, 4-pole D.C. Generator has 328 wave connected armature conductors, when the machine is delivering full load, the brushes are given a lead of 7.2 electrical degrees. Calculate (i) Demagnetizing AT /Pole (ii) Cross magnetizing AT / Pole.
14. (a) Draw the power stages in a D.C motor.
(b) A 440 V DC shunt motor has armature resistance of 0.8 ohms and field resistance of 200 ohms. Determine the back emf when giving an output of 7.46kw at 85% efficiency.
15. (a) Explain the speed control of D.C shunt motor by use of armature control method.
(b) Explain with circuit diagram, How to control the speed of a D.C series motor using armature diverter method.
16. Explain the method of conducting Brake test on D.C shunt Motor with neat diagram.
17. (a) Explain with figure charging of battery by constant current method.
(b) Write about the Indications of Fully Charged Lead Acid Battery.
18. (a) Derive the e.m.f equation of a D.C generator.
(b) State precautions taken during charging & discharging of a battery.
