EE 303

III Semester Diploma (Electrical) Examination, August 2011

ELECTRICAL MACHINES – I

Time : 3 Hours Max. Marks : 75

Instructions : *1) **Answer all questions in Part – A and either (a) or (b) of each question in Part – B.***

*2) **Each question carries 1 (one) mark in Part – A and 12 (twelve) marks in Part – B.***

PART – A

I. Answer **all** questions : **(15×1=15)**

1) Write Lenz's law.

2) Define magnetic field intensity.

3) Define self inductance.

4) Define transformation ratio.

5) Why copper loss is called as variable loss ?

6) How the transformers are classified ?

7) Mention the function of commutator in DC machines.

8) Why the armature core is laminated ?

9) Write the emf equation of DC generator.

10) Why need for starter ?

11) Draw the speed torque curve for DC series motor.

12) Write the disadvantages of 3 point stater.

13) Why need for growler test in DC machine ?

14) What are common defects in commutator ?

15) Write the types of maintenance.

P.T.O.

PART – B

I. Answer **all** questions : **(12×5=60)**

16) a) Explain statistically induced emf and dynamically induced emf with example.

OR

b) Derive the equation for mutual inductance.

17) a) Explain the construction details of single phase transformer and derive the emf equation.

OR

b) A single phase transformer has 100 turns on primary and 250 secondary turns. The net cross sectional area of the core is 0.003 m^2. If the primary winding is connected to a 50 Hz supply at 400 volts. Calculate the :

i) Maximum value of flux density

ii) The voltage induced in the secondary winding.

18) a) Explain the construction details of DC generator.

OR

b) A shunt generator delivers 195 A at a terminal potential difference of 250 V. The armature resistance and shunt field resistance are 0.02 ohms and 50 ohms respectively. The iron and friction losses equal 950 W. Find :

i) emf generated

ii) copper losses

iii) electrical efficiencies.

19) a) Explain with neat diagram, working prineiple of DC motor.

OR

b) A 500 V series motor has 4 poles, a wave wound armature with 948 conductors and in total resistance of 2 ohms.

20) a) What are the defects in a commutator and explain.

OR

b) Explain the types of motor control.