b) Give any two applications of servo motors.

c) Give working principle of linear induction motor.

d) Compare various types of single phase induction motors in terms of performance.

OR

Explain speed control methods of single phase induction motor.

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Total No. of Questions :5] *[Total No. of Printed Pages :4*

Roll No .....

EE/EX-404

B.E. IV Semester

Examination, June 2016

Electrical Machine - I

Time : Three Hours

Maximum Marks : 70

Note: i) Answer all questions. In each question part A, B and C is compulsory and D part has internal choice.

ii) All parts of each question are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

Unit - I

1. a) What is no load current of transformer? On what factors does it depend.

b) What happens when a 50Hz transformers operates on 25Hz supply?

c) Why efficiency of transformer is higher as compared to other electrical machine.

d) Describe Sumpner's test on transformer with neat diagram.

OR

11kV/220V, 150kVA, 1-phase, 50Hz transformer has core loss of 1.4kW and full load copper loss of 1.6kW. Determine maximum efficiency at unity pf.

Unit - II

2. a) While connecting transformer in parallel, what factors must taken into consideration.

   b) What advantages is obtained with the delta connection of transformer? Explain.

   c) Write short note on Tap changers.

   d) Explain the constructional details of a three phase transformer with diagrams.

OR

A 500kVA transformer with 1.5% resistive and 5% reactive drops is connected in parallel with a 1000kVA transformer with 1% resistive and 4% reactive drops. The secondary voltage of each transformer is 400V on load. Determine how they share a load of 500kVA at a po er factor of 0.8 lagging.

Unit - III

3. a) Why induction motor is also called as asynchronous motor.

   b) What information is obtained by no load test on induction motor?

   c) What is meant by slip in three phase induction motor?

   d) Draw and explain torque speed characteristics of three phase induction motor.

OR

A 400V, three phase, star connected induction motor has a stator impedance of (0.06 + j0.2) ohm and an equivalent rotor impedance of (0.06 + j0.22) ohm. Determine the maximum gross power output and the slip at which it occurs. Exciting current may be neglected.

Unit - IV

4. a) Write various methods to control speed of squirrel cage induction motor.

   b) What is cogging? Discuss.

   c) Give impact of harmonics on performance of induction motor.

   d) Explain the principle of speed control of three phase induction motor by adding resistance. Draw the corresponding torque and discuss the applications of this method.

OR

Explain dc dynamic braking in detail with neat diagrams.

Unit - V

5. a) Draw the equivalent circuit diagram of single phase induction motor.