Exam.Code:0938
Sub. Code: 6999

(18)

1059

B.E. (Electrical and Electronics Engineering)

Eighth Semester

Elective – II

EE-808: Electrical Machine Design

Max. Marks: 50

me allowed: 3 Hours

OTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

a) List the advantages of direct cooling of electrical machines.

b) Why the core of transformer is stepped.

c) State the effect of air gap length in 3 -phase induction motor.

d) State merits of computer aided design of electrical machines.

e) What is window space factor of transformer? (5x2)

UNIT – I

II. a) Derive output equation of AC machines in terms of its main dimensions.

b) What are the assumptions made to calculate slot leakage? (2x5)

III. a) What is the difference between continuous and short time rating of rotating machines.

b) What are design procedure followed to eliminate harmonic torque in 3 phase induction motor. (2x5)

IV. a) Explain hydrogen cooling and its advantages.

b) Determine the main dimensions of core of a 5KVA, 11000/400 volts, 50hz, single phase core type distribution transformer having following data:

The net conductor area in the window is 0.6 times the net cross sectional area of iron in the core. The core is of square cross section, maximum flux density is IWb/m^2 Current density is 1.4 A/mm^2. Window space factor is 0.2. Height of the window is 3 times its width. (2x5)

UNIT – II

V. State and explain the general factors that influence the choice of specific electric and magnetic loadings for rotating machines. (10)

P.T.O.

VI. Estimate the stator core dimensions and the total number of stator conductors for a 3 phase 100kW, 3300V, 50 hz, 12 pole star connected slip ring in induction motor. Assume average gap density=0.4 Wb/m^2, conductors per metre =25,000 A/m, efficiency=0.9, power factor=0.9 and winding factoi-0.96. Choose main dimension to give best power factor. (10)

VII. Explain ventilation Schemes employed in transformers and rotating machines. (10)

x-x-x