B.E. Electrical VII CBGS

25.5.16

EMD

Q.P.Code **31328**

(3 Hours) [Total Marks : 80

N.B. : 1. Question No.1 is **compulsory.**
2. Attempt **any three** questions out of remaining **five** questions.
3. Assume **suitable** data if necessary and justify the same.

Q1 Answer the following questions. 20
A) Explain the classification of magnetic material.
B) Explain the different insulating materials used in transformer.
C) Discuss the factors affecting the size of motor.
D) Explain the advantages of Energy Efficient Motor.

Q2 A) Derive the output equation for a three induction motor . 10
B) In the design of a 3 phase, 440 V, 50 Hz, 3.75 KW, delta connected 10
induction motor, assume the specific electric loading of 23000ac/m, specific
magnetic loading of 0.45 wb/m². Full load efficiency 85%, power factor
0.84, stator winding factor 0.95 and estimate the following :
1) Stator core dimension
2) Number of stator slots and winding turns,
3) conductors per slot

Q3 A) Derive the output equation for a three core type transformer. 10
B) Calculate the per unit leakage reactance of a 3 phase,50 Hz, 10
11000/440V, 315 KVA, delta/star core type transformer with data LV
Winding:
Inner diameter = 0.22mm, Outer diameter = 0.26mm, Area of
conductor = 170mm², Length of coil = 0.5 meter,
Voltage per turn = 8V,
HV Winding :
Inner diameter = 0.29mm, Outer diameter = 0.36mm, Area of conductor
=5.4mm² Resistivity = 0.021 Ω/m/mm²

Q4 A) Describe different types of cooling methods for transformer. 10
B) Explain various types of winding used in case of transformer. 10

Q5 A) Discuss the various types of leakage fluxes in induction motor with neat 10
diagram.
B) Discuss the various factors affecting the selection of number of stator 10
slots and rotor slots in case of three phase induction motor.

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Q6   A) Write noets on (any two)   20
     A) Designing aspects of EEM.
     B) Methods of reducing harmonic torque in induction motor.
     C) Mechanical forces developed in transformer winding