M 25888

Reg. No. : .....

Name : .....

VIII Semester B.Tech. Degree (Supplementary – Including Part Time) Examination, October 2014

(2007 Admn. Onwards)

PT 2K6/2K6 EE 805 (B) : SPECIAL MACHINES AND LINEAR MACHINES

Time : 3 Hours Max. Marks : 100

***Instructions** : Answer **all** questions in Part – **A**.*
*Answer **one** question from **each** Module in Part – **B**.*

PART – A

I. a) Explain the construction of AC Servo motor. **5**

b) Discuss the positive sequence equivalent circuit of AC Servo motor. **5**

c) Explain half step mode of operation in AC Servo motor. **5**

d) Explain the construction of a Permanent Magnet (PM) stepper motor. **5**

e) Discuss the working of a universal motor. **5**

f) Draw the torque speed characteristics of a Hysteresis motor. **5**

g) With neat diagram explain the working for Transverse flux Linear Induction Motor (TLIM). **5**

h) What are the advantages of linear motors over rotating motors ? **5**

(8×5=40)

PART – B

II. a) Explain the theory of operation of AC Servo motor based on symmetrical components. **15**

OR

b) Deduce the expression for Torque developed in AC Servo motor from equvt crt. **15**

P.T.O.

III. a) A five phase stepper motor has 40 teeth. It drives a lead screw 10 threads per c.m. The lead screw in turn produces a linear motion of a cutting tool. The input pulse is applied 10 times. Find the distance covered by the cutting tool. 15

OR

b) Derive the torque equation of a stepper motor. 15

IV. a) A 3ϕ SRM has six stator poles and four rotor teeth. Draw the feasible zone for stator and rotor pole arcs. Design pole arc and tooth arc. Sketch the $\angle - \phi$ profile. 15

OR

b) Explain the operation of a Hysteresis motor. 15

V. a) Derive thrust equation of LIM. 15

OR

b) Derive equivalent circuit of a Linear Induction Motor (LIM) from the basic principle of operation ? 15

(15×4=60)
