M 26859

Reg. No.: ....

Name: ....

VIII Semester B.Tech. Degree (Reg./Sup. Including Part Time) Examination, April 2015
(2007 Admin. 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 principle of operation of a DC servo motor.   **5**

    b)   Draw the equivalent circuit of AC servo motor.   **5**

    c)   Describe the construction of a Disc Magnet (DM) stepper motor.   **5**

    d)   Explain (1) step angle (2) resolution (3) stepping rate of a stepper motor.   **5**

    e)   Explain the constraints of pole arc and pole tooth arc of an SRM.   **5**

    f)   Discuss '$\psi - i$' curve of SRM.   **5**

    g)   Explain transverse flux linear induction motor (TLIM) with diagrams.   **5**

    h)   Describe 'Goodness factor".   **5**

                                (8×5=40)

PART – B

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

                   OR

    b)   Derive torque equation of AC servo motor from equivalent circuit.   **15**
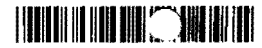
III. a) Explain the construction and working principle of single stock VR stepper motor. **15**

OR

b) Describe the operation of a Dermont Magnet stepper motor . **15**

IV. a) Derive torque equation of an SRM. **15**

OR

b) Explain the principle of operation of a universal motor. Draw equivalent circuit and phasor diagram. **15**

V. a) Explain the construction of Axial flux given indution motor. **15**

OR

b) Derive thrust equation of LIM. **15**

(15×4=60)