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Question Paper Code: 36301

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Sixth Semester

Electrical and Electronics Engineering

01UEE601 - ELECTRIC DRIVES AND CONTROL

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Define dynamic torque.
2. Drive the equations governing motor load dynamics.
3. Write down the speed - torque relation for single phase fully controlled converter fed DC motor in continuous conduction mode.
4. What is time ratio control?
5. What are the merits and demerits of stator voltage control?
6. What is the significance of field weakening mode control in induction motor drive system?
7. What is meant by power factor control?
8. List out advantages and disadvantages of PMSM.
9. What is field weakening mode control in dc drives?
10. Compare VSI fed drives with CSI fed drives.

PART - B (5 x 16 = 80 Marks)

11. (a) Explain in detail the multi quadrant dynamics in speed-torque plane. (16)

Or

(b) (i) Explain in detail about steady state stability of equilibrium point in electric drive. (8)

(ii) Derive the fundamental torque equation for a motor load system. (8)

12. (a) Explain in detail the operation and steady state analysis of single phase fully controlled converter fed separately excited dc motor drive in continuous and discontinuous conduction mode. (16)

Or

(b) Explain the operation of four quadrant chopper control in dc drives. (16)

13.(a) Explain about VSI induction motor drives and also closed loop control for induction motor drives. (16)

Or

(b) Explain about V/ F control in Induction motor. (16)

14. (a) Explain static scherbius drive operation in detail with necessary diagram and equations. (16)

Or

(b) Explain self-control of synchronous motor drive operated with constant margin angle control. (16)

15. (a) Derive the transfer function of DC motor-load system. (16)

Or

(b) Explain closed loop operation of armature voltage control method with field weakening mode control in detail. (16)