Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 51626

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2014.

Third Semester

Mechanical Engineering

ME 2205/ME 36/EE 1205 A/080120013/10122 ME 306 — ELECTRICAL DRIVES AND CONTROL

(Common to Production Engineering, Chemical Engineering , Petrochemical Engineering, Petrochemical Technology and Mechanical (sandwich) Engineering)

(Regulation 2008/2010)

(Also common to PTME 2205 Electrical Drives and Control for B.E. (Part-Time) Third Semester – Production Engineering – Regulation 2009)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. What are the basic elements of electric drives?

2. What are the factors to be considered for the selection of electrical drives.

3. Draw speed-torque characteristic of constant torque type load.

4. Draw speed-armature current characteristic of DC series motor.

5. What are the types of DC motor starter?

6. What is the basic principle of primary resistance starter used in 3-phase induction motor?

7. Define armature control method of DC shunt motor.

8. Define duty cycle in DC chopper.

9. What are the conventional methods of speed control of three phase induction motor from stator side.

10. What is the basic principle in v/f control?

PART B — (5 × 16 = 80 marks)

11. (a) List and explain various classes of motor duty. (16)

Or

(b) Explain the selection of power rating for drive motor with regard to continuous duty load.

12. (a) With circuit diagram explain plugging method of braking of D.C. shunt motor and its torque speed-characteristics. (16)

Or

(b) Describe speed-torque characteristics for DC dynamic braking of three-phase induction motor.

13. (a) Explain construction and operation of 4-point starter. (16)

Or

(b) Explain with diagram construction and working of rotor resistance starter.

14. (a) Describe with diagram Ward-Leonard speed control system for DC motor. (16)

Or

(b) With diagram describe working of single phase fully controlled rectifier drive.

15. (a) Explain various method of conventional speed control of three-phase induction motor from rotor–side. (16)

Or

(b) Explain working of conventional Kramer slip power recovery system.

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