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

Question Paper Code: 53039

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Third Semester

Chemical Engineering

15UEE324 - ELECTRICAL DRIVES AND CONTROL

(For Chemical Engineering)

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The heating time constant of an electrical machine gives an induction of its

   (a) rating (b) cooling (c) overload capacity (d) short time rating

2. The basic elements of a electric drive are

   (a) electric motor (b) control system
   (c) electrical motor and control system (d) none of these

3. In which braking back emf exceeds supply voltage?

   (a) Regenerative (b) Dynamic (c) Plugging (d) None of these

4. The stator core of a 3-phase induction motor is laminated in order to reduce the

   (a) None of these (b) hysteresis loss
   (c) weight of the stator (d) eddy electric current loss

5. When smooth and precise speed control over a wide range is desired, the motor preferred is

   (a) synchronous motor (b) squirrel cage induction motor
   (c) wound rotor induction motor (d) dc motor

6. Belted slip ring induction motor is almost invariably used for

(a) centrifugal blowers (b) jaw crushers
(c) screw pumps (d) water pumps

7. Speed of d.c. shunt motors are controlled by

(a) Flux control method (b) Rheostatic control method
(c) Voltage control method (d) All the above

8. Ward-Leonard control is basically a _____ control method.

(a) Field control (b) Armature resistance control
(c) Armature voltage control (d) Field diverter control

9. The method which can be used for the speed control of induction motor from stator side is

(a) V / f control
(b) Controlling number of stator poles to control N_s
(c) Adding rheostats in stator circuit
(d) All the above

10. Kramer system for controlling the speed of 3 phase induction motor is mostly used for motors of

(a) Above 4000 kW (b) Below 4000 kW
(c) Below 3000 kW (d) None of these

PART - B (5 x 2 = 10 Marks)

11. What are the factors that influence the choice of electrical drives?

12. What are the different types of electric braking?

13. Why squirrel cage induction motors are not used for loads requiring high starting torque?

14. Draw the basic circuit for chopper controlled separately excited dc motor drive.

15. State the application of AC voltage regulator.

PART - C (5 x 16 = 80 Marks)

16. (a) Explain in detail about the various types of electric drives. (16)

Or

(b) (i) Write a brief note on classes of duty for an electric motor. (8)

(ii) Explain heating and cooling curves of an electric drive. (8)

17. (a) Explain with necessary circuit diagram the reverse current braking and the braking characteristics of the following. (i) DC shunt motor (ii) DC series motor. (16)

Or

(b) Explain the Speed-Torque characteristics of three phase induction motor with neat diagrams. (16)

18. (a) Explain the starting methods in dc motor and explain any one of its types. (16)

Or

(b) Explain the starters for slip–ring induction motors. (16)

19. (a) (i) Explain the field control methods used for d.c series motor for speed control. (8)

(ii) Explain about the necessity of speed control. (8)

Or

(b) Briefly explain about the DC chopper drives. (16)

20. (a) Explain the different methods of speed control used in three phase induction motors. (16)

Or

(b) Explain types of slip power recovery scheme. (16)
