

[Total No. of Questions - 9] [Total No. of Printed Pages - 2]

Dec.-23-0506

EE-604 (Electrical Drives)

B.Tech. 6th (CBCS)

Time : 3 Hours

Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

**Note :** Attempt five questions in all, selecting one question each from section A, B, C & D. Section E is compulsory.

#### SECTION - A

1. What are the advantages of electric drive system? State essential parts of this drive system. What are the functions of power modulator? (10)
2. What is the fundamental torque equation for motor-load system? Hence derive this equation for constant inertia drives. (10)

#### SECTION - B

3. A motor of smaller rating can be selected for a short time duty. Why? State and explain the disadvantages of using a motor of wrong rating. (10)
4. Give the generalized circuit for speed control of electrical drive system. Explain the function of speed controller in this system by taking a suitable example. (10)

#### SECTION - C

5. Explain any one single-phase rectifier controlled DC motor drive system with appropriate waveform representations. (10)

2

EE-604

6. Explain two-quadrant chopper fed DC drives with suitable waveforms. (10)

#### SECTION - D

7. Explain voltage controlled induction motor drive system. Also show the effect of voltage on torque-speed characteristics of the motor. (10)
8. Name the various speed control methods of induction motor. Explain any one method in detail. (10)

#### SECTION - E (Compulsory)

9. Write short note on:
  - a. Dynamic equation of an electric drive system.
  - b. Thermal model of motor.
  - c. Starting of DC motor.
  - d. Cycloconverter fed induction motor drive system. (4×5=20)