

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, APRIL - 2025**

ELECTRICAL DRIVES AND CONROLS

[Maximum marks: 100]

[Time: 3 Hours]

PART – A

Maximum marks: 10

I. (Answer *all* the questions in one or two sentences. Each question carries **2** marks)

1. Define electric drive.
2. List any two methods of starting of induction motors.
3. Enumerate any two methods of braking of induction motors.
4. Name any two methods of starting of DC motors.
5. Mention the electric motors used in paper mills. (5 x 2 = 10)

PART – B

Maximum marks: 30

II. (Answer any *five* of the following questions. Each question carries **6** marks)

1. List the advantages of electric drives.
2. Explain the classification of electric drive system.
3. Compare current source inverter and voltage source inverter drives.
4. Draw and explain the starting of induction motor by autotransformer starter.
5. Describe chopper-controlled dc drives.
6. Discuss about different methods of speed control of DC shunt motors.
7. Explain the electric drives used in steel mills. (5 x 6 = 30)

PART – C

Maximum marks: 60

(Answer *one full* question from each unit. Each full question carries **15** marks)

UNIT – I

- III.** (a) Enlist the different factors for the choice of electric drives. (7)
- (b) Plot the block diagram of electric drive system and describe the various components of electric drives. (8)

OR

- IV.** (a) Differentiate between electric drives and mechanical drives. (8)
(b) Explain the power rating for continuous operation at constant speed drives like pumps and fans (7)

UNIT - II

- V.** (a) Describe speed control by cycloconverter. (8)
(b) Explain the speed control of single-phase induction motors by voltage controllers. (7)

OR

- VI.** (a) Explain on regenerative braking of three phase induction motors. (7)
(b) Describe variable frequency control from voltage sources. (8)

UNIT - III

- VII.** (a) Explain the operation of uncontrolled rectifier drives. (7)
(b) Explain the four point starter with neat diagram. (8)

OR

- VIII.** (a) Explain the operation of DC traction using chopper-controlled DC motor drives. (7)
(b) Discuss any two methods of braking of DC shunt motors. (8)

UNIT - IV

- IX.** (a) Explain the working of battery powered vehicle drives. (8)
(b) Elaborate on electric drives in sugar mills. (7)

OR

- X.** (a) Describe the working of solar powered pump drives. (8)
(b) Explain the electric drives used in coal mines. (7)
