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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2019

ELECTRIC DRIVES AND CONTROLS

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

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

1. Define electric drive.
2. List any two advantages of electric drives.
3. Write any two speed control methods of induction motor.
4. Name the different methods of starting of DC motors.
5. List any two advantages of battery powered vehicles (electric vehicles). (5 × 2 = 10)

PART — B

(Maximum marks : 30)

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

1. Write about the current status of electric drives.
2. Draw and explain the starting of induction motor by autotransformer starter.
3. Compare current source inverter and voltage source inverter drives.
4. Write about conventional DC traction drives.
5. Draw and explain the basic characteristics of DC series motor.
6. Explain the working of battery powered vehicle.
7. Explain the electric drives in textile mills. (5 × 6 = 30)

Marks

PART — C

(Maximum marks : 60)

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

UNIT — I

III (a) Draw and explain the block diagram of electric drive. 8

(b) List the different factors for the choice of electric drives. 7

OR

IV (a) Explain the power rating for continuous operation at constant speed drives like pumps and fans. 8

(b) Compare electric drives and mechanical drives. 7

UNIT — II

V (a) With neat sketch, explain the speed control of three phase induction motor by voltage source inverter. 8

(b) Draw and explain the speed control of synchronous motor from variable frequency. 7

OR

VI (a) Explain variable frequency control from current source inverter. 8

(b) Explain the speed control of single phase induction motors by voltage controllers. 7

UNIT — III

VII (a) Explain the speed control by transformer and uncontrolled rectifier fed DC drives. 8

(b) Draw and explain the dynamic braking of DC motors. 7

OR

VIII (a) Explain the operation of DC traction using chopper controlled DC motor drives. 8

(b) Explain speed control by controlled rectifier fed DC drives. 7

UNIT — IV

IX (a) Explain the electric drives in paper mills. 8

(b) Explain the working of solar powered pump drives. 7

OR

X (a) Explain the electric drives in cement mills. 8

(b) Explain the electric drives in coal mining. 7

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