TED (10) – 4043 Reg. No. .....

(REVISION — 2010) Signature .....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2018

ELECTRICAL POWER UTILISATION

[*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. What is meant by convection mode of heat transfer ?
2. List the types of resistance welding.
3. What is meant by extraction of metals ?
4. List any 2 practical importance of Speed-Time curve.
5. Any 2 advantages of electric braking. (5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. State and explain direct core type induction furnace.
2. Write any six applications of dielectric heating.
3. Explain the following terms.

   (a) Electroforming (b) Electrofacing
4. State advantages and disadvantages of individual drive.
5. Derive the expression for maximum speed of trapizoidal Speed-Time curve in terms of time, acceleration and retardation.
6. State any six important requirements of traction system.
7. What are the advantages of electric braking ? (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) Explain the methods of Resistance heating. 8

(b) Explain the types of Butt welding. 7

OR

IV (a) What are the advantages of Elecrtic heating ? 8

(b) Explain dielectic heating and advantages. 7

UNIT — II

V (a) State the advantages of electric drive. 8

(b) Explain the following with example :
(i) Refining of metals (ii) Electro plating 7

OR

VI (a) Explain about enclosure and list various types. 8

(b) Classify electric drive and explain. 7

UNIT — III

VII (a) Explain the following terms :
(i) Average speed (ii) Schedule speed
(iii) Crest speed (iv) Tractive effort 8

(b) A train has a schedule speed of 60 km/hr between stops which are 6 km apart. Determine the crest speed over the run, assuming trapezoidal Speed-Time curve. The train accelerates at 2 kmphps and retards 3 kmphps duration of stop is 60 sec. 7

OR

VIII (a) Derive expressions for :
(i) Tractive effort for acceleration.
(ii) Tractive effort for gradient.
(iii) Tractive effort for train resistance. 8

(b) An electric train has an average speed of 42 kmph on a level track between stops 1400 m apart. It is accelerated at 1.7 kmphps and is braked at 3.3 kmphps. Draw the speed time curve for the run. 7

UNIT — IV

IX (a) What are the advantages of electric braking ? 8

(b) Explain rheostatic braking and regenerative braking. 7

OR

X (a) Explain the essential characteristics of traction Motor. 8

(b) Explain with neat diagram the regenerative braking of DC series motor. 7