TED (10) – 3054 Reg. No. .....

(REVISION – 2010) Signature .....

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

DC MACHINES

[*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. Explain properties of copper.
2. What is known as grain oriented sheet steel ?
3. Write the classifications of DC Generator according to field excitation.
4. Define armature reaction.
5. Name the different losses in a DC Machine. (5 × 2 = 10)

PART — B

(Maximum marks : 30)

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

1. Explain hysteresis loss and method of reducing it.
2. Explain the term coercive force and residual magnetism.
3. Derive the emf equation of a DC Generator.
4. Explain the use of inter poles with figure.
5. What are the effects of armature reaction ? Explain.
6. Explain the power stages of a DC Motor.
7. Explain the need of starters for starting DC Motors. (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) Compare the properties of copper and aluminium. 7

(b) Explain the properties of grain oriented sheet steel. 8

OR

IV (a) Draw and explain B-H curve. 8

(b) Explain the properties of Ferro magnetic materials. 7

UNIT — II

V (a) Draw the main parts of a DC Generator and explain its working. 8

(b) Explain the classification of DC Compound generators with connection diagrams. 7

OR

VI (a) An 8 Pole generator has an output of 200 A, at 500 V the lap connected armature has 1280 conductors. 160 commutator segments. If the brushes are advanced 4 segments from the no-load neutral axis, estimate the armature demagnetising and cross magnetising ampere turns per pole. 8

(b) What are the different pitches of Armature winding ? Explain. 7

UNIT — III

VII (a) What are the conditions for voltage build-up of a DC shunt Generator ? Show diagrams. 7

(b) Explain the method for load sharing of two DC generators. 8

OR

VIII (a) Explain the procedure of finding critical field resistance from OCC with figure. 8

(b) What are the application of DC shunt series and compound generators ? 7

UNIT — IV

IX (a) What are the classifications of DC .Motors according to field connection ? 7

(b) What are the different speed control methods of DC Motors ? Explain. 8

OR

X (a) Write two applications of shunt series and compound Motors, with reason. 8

(b) Briefly describe about a permanent magnet DC Motor with figure. 7