

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2017**

**ELECTRICAL TECHNOLOGY**

[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 time period.
2. What are the losses in a transformer ?
3. Which starter is most suitable for starting of a DC shunt motor ?
4. Name the types of rotor used high speed alternator.
5. Define slip of an induction motor.

(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 maximum power transfer theorem.
2. Define : (a) capacitive reactance (b) impedance (c) power factor
3. Explain the principle of operation of DC generator.
4. What are the various energy losses in a DC generator.
5. Find the relation between frequency and Speed of an alternator.
6. List the application of a stepper motor.
7. What is the necessity of earthing ?

(5×6 = 30)

## PART — C

(Maximum marks : 60)

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

## UNIT — I

- III (a) State and explain super position theorem. 7  
 (b) Derive the condition for maximum efficiency in a transformer. 8

OR

- IV (a) A resistance of  $50\Omega$  and a capacitor of  $43.7\ \mu\text{f}$  are connected in series to a supply of 250V, 50 Hz. Calculate :  
 (i) Capacitive reactance (ii) Impedance (iii) Current 7  
 (b) Explain SC test of a transformer with diagram. 8

## UNIT — II

- V (a) Derive the emf equation of DC generator. 7  
 (b) Describe with a neat sketch the working of 3 point starter. 8

OR

- VI (a) Explain the various methods used for speed control of DC motor. 7  
 (b) Describe the characteristics of DC series motor. 8

## UNIT — III

- VII (a) Draw and explain stepper motor. 7  
 (b) Derive emf equation of alternator. 8

OR

- VIII (a) Describe load characteristics of alternator. 7  
 (b) Draw and explain AC Servo motor. 8

## UNIT — IV

- IX (a) Describe the working principle of 3 phase induction motor. 7  
 (b) Explain star delta starter with neat sketch. 8

OR

- X (a) Explain the capacitor start capacitor run single phase induction motor. 7  
 (b) Draw and explain pipe earthing. 8