

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, NOVEMBER - 2023**

ELECTRICAL POWER UTILIZATION & SYSTEM PROTECTION

[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 fusing current of a fuse.
2. State recovery voltage of circuit breaker.
3. Define protective relay.
4. State the Faraday's Laws of electrolysis.
5. Define traction effort.

(5 x 2 = 10)

PART – B

Maximum marks: 30

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

1. Explain different arc extinction methods adopted in a circuit breaker.
2. Differentiate between fuse and circuit breaker.
3. Explain the Classification of relay based on time of operation.
4. Explain any three method of neutral earthing.
5. Explain the field of applications of electrolysis.
6. State the advantages and disadvantages of individual drive.
7. Explain the advantages of electric traction.

(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) Explain with neat sketch construction and working of HRC fuse. (8)
- (b) Explain the working of air blast circuit breaker. (7)

OR

- IV.** (a) Explain with neat sketch construction and working of SF6 circuit Breaker. (8)
(b) State the advantages and disadvantages of fuse. (7)

UNIT-II

- V.** (a) Explain the Merz-prize protection for 3 phase transformers. (8)
(b) Explain the basic requirements of a protective relay system. (7)

OR

- VI.** (a) Explain the operation of lightning arrester. (8)
(b) Explain with neat sketch principle of operation of directional over Current relay. (7)

UNIT-III

- VII.** (a) Explain with neat sketch Direct and Indirect resistance heating. (8)
(b) Explain principle and applications of spot and seam welding. (7)

OR

- VIII.** (a) Explain with neat sketch Direct and indirect arc furnace. (8)
(b) Explain advantages of electric heating. (7)

UNIT-IV

- IX.** (a) Sketch the speed time curve of electric traction system and explain the different regions. (8)
(b) Explain the different methods of electric braking. (7)

OR

- X.** (a) Explain the method of Rheostatic braking on DC shunt and series motor. (8)
(b) Explain the factors affecting specific energy consumption. (7)
