

TED (15) -6031
(Revision -2015)

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE – NOVEMBER -2020.

ELECTRICAL POWER UTILIZATION AND SYSTEM PROTECTION

(Maximum Marks:75)

PART-A

[Time: 2.15 hours]

Marks

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

1. Define circuit breaker.
2. State soil resistivity.
3. State the modes of heat transfer.
4. Describe the process of Electrolysis.
5. What do you understand by Traction effort?

(3x2=6)

PART - B

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

1. Describe the factors affecting the current carrying capacity of a fuse element.
2. Discuss the classification of Circuit Breakers based on the medium used for arc extinction.
3. List the advantages of attracted armature type relay.
4. Explain the primary and backup protection in a power system.
5. List the applications of dielectric heating.
6. State the advantages of electric traction.
7. Explain the methods of electric braking.

[4x6 =24]

PART - C

(Answer **any of the three units** from the following. Each full question carries 15 marks)

UNIT I

III (a) Explain the operation of SF6 Circuit Breaker with neat sketch.

(7)

(b) Differentiate between fuse and Circuit Breakers.

(8)

OR

- IV (a) Describe the working of HRC fuse with sketches. (7)
(b) Explain the arc phenomena and arc extinction. (8)

UNIT- II

- V (a) Explain the principle of operation of solenoid plunger type relay. (7)
(b) Explain the differential protection of alternators with neat diagram. (8)

OR

- VI (a) With a neat sketch, explain the working of a Buchholz relay. (8)
(b) Enlist the methods of neutral grounding and explain any one of them. (7)

UNIT- III

- VII (a) List out the advantages of electric heating. (7)
(b) Explain the principle of seam welding with neat sketch. (8)

OR

- VIII (a) Explain the field of applications of electrolysis. (8)
(b) Explain the principle of operation of core type induction furnace with neat diagram. (7)

UNIT – IV

- IX (a) Classify the electric drives based on their operation and applications. (8)
(b) Explain the advantages of electric traction. (7)

OR

- X (a) Explain the method of Rheostatic braking on DC shunt motor with schematic. (7)
(b) An electric train is accelerated at 1.5 kmphs and is braked at 3 kmphs. The train has an average speed of 45 kmph on a level track of 1500 metres between stations.
Determine (i) Actual time of run (ii) Maximum speed
(iii) Distance travelled before applying brakes and
(4) Schedule speed
Assume time for stop as 15 seconds and run according to trapezoidal speed-time curve. (8)
