

TED(15)6031

Reg.No.....

(REVISION -2015)

Signature.....

**SIXTH SEMESTER DIPLOMA EXAMINATION IN ELECTRICAL AND
ELECTRONICSENGINEERING**

**ELECTRICAL POWER UTILIZATION AND SYSTEM
PROTECTION**

(Maximum marks : 100)

(Time 3 hrs)

PART –A

(Maximum marks: 10)

(MODEL QUESTION PAPER)

I Answer the following questions in one or two sentences. Each question carries 2 marks.

1. Define the fusing current of a fuse.
2. List any four relays according to the timing characteristics
3. Give the different methods of heat transfer.
4. List out the basic elements of an electric drive
5. Define the schedule speed of an electric train. (5X2=10)

PART-B

(Maximum marks: 30)

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

1. Sketch a line diagram of a plain break oil circuit breaker and describe its working.
2. Explain the operation of an attracted armature type relay with a neat diagram.
3. State the need of primary and backup protection with the help of a line diagram.
4. Explain the direct resistance heating method with a neat sketch.
5. Prepare short note on different electrical welding methods and their applications
6. Specify the factors to be considered for the selection of a motor for a particular drive.
7. Explain the regenerative braking method of an electric motor. (5X6=30)

PART – C

(Maximum marks:60)

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

Unit – I

- III (a) List any seven factors affecting the fusing current of a fuse. (7)
- (b) Explain the working of an SF₆ circuit breaker with a neat sketch. (8)

OR

- IV (a) Define the terms (1) fusing current (2) fusing factor (3) prospective current
(4) cut-off current (5) breaking capacity (6) arcing time (7) pre arcing time (7)
- (b) Explain the principle of operation of a vacuum circuit breaker. (8)

UNIT- II

- V (a) State the basic requirements of protective relaying (7)
- (b) Explain the working of an induction type overcurrent relay with a neat sketch. (8)

OR

- VI (a) Explain the time graded protection of radial feeders (7)
- (b) Explain the operation of a Thyritetype lightning arrester with neat diagram. (8)

UNIT –III

- VII (a) Describe the operation of a welding transformer with reactance coil. (7)
- (b) Explain the working of an indirect core type induction furnace. (8)

OR

- VIII (a) Describe the different lighting schemes and suggest the suitable places of application. (7)

(b) List out any six field of application of electrolysis and prepare a brief note on any one process. (8)

UNIT- IV

IX (a) List out the limitations of group drives. (7)

(b) An electric train has an average speed of 42kmph on a level track in between stops 1400 m apart. It is accelerated at 1.7kilometer per hour per second and is braked at 3.37kilometer per hour per second. Draw the speed time curve for the run and indicate all numerical values needed for the curve. (8)

OR

X (a) List the factors affecting specific energy consumption of train movement (7)

(b) Explain the rheostatic braking method of DC shunt motor with suitable diagram. (8)