

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/  
COMMERCIAL PRACTICE, APRIL - 2025**

**ELECTRICAL POWER GENERATION, TRANSMISSION AND DISTRIBUTION**

[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. List the main components of a nuclear power station.
2. Define the term Tariff.
3. Define the term skin effect.
4. Define transmission efficiency.
5. Give the expression for determine the string efficiency. (5 x 2 = 10)

**PART – B**

**Maximum marks: 30**

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

1. Explain any three choices of site for hydroelectric power station.
2. Draw the layout of a gas power station.
3. Define
  - (a) Diversity factor
  - (b) Plant capacity factor
4. Differentiate the base load and peak load with the help of load curve.
5. Explain any three factors affecting corona.
6. List the comparison between the overhead and underground systems.
7. Explain the following terms.
  - (a) Feeder
  - (b) Distributor(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 the layout and working of a Hydroelectric power station. (8)
- (b) List the factors governing the choice of location of a steam power station. (7)

**OR**

- IV.** (a) A thermal power station has the following data.  
Maximum demand = 20000kw, Load factor = 40%, Boiler efficiency = 85%,  
Turbine efficiency = 90%, Coal consumption = 0.9kg/kWh, Cost of 1 ton of coal  
is Rs. 300. Determine thermal efficiency & coal bill per annum. (8)
- (b) List Advantages and Disadvantages of nuclear power plant. (7)

**UNIT – II**

- V.** (a) Explain the different types of tariffs. (8)
- (b) The maximum demand on a power station is 100 MW. If the annual load factor  
is 40%. Calculate the total energy generated in a year. (7)

**OR**

- VI.** (a) Discuss advantages of Interconnected grid system. (7)
- (b) Calculate the annual bill of a consumer whose maximum demand is 100 kW,  
pf.=0.8 lagging and load factor = 60%. The tariff used is Rs. 75 per KVA of  
maximum demand plus 15 paisa per kWh consumed. (8)

**UNIT - III**

- VII.** (a) Write the advantages of a DC transmission system. (7)
- (b) A transmission line has a span of 214m between level supports. The conductors  
have a 2 cross-sectional area of 3.223cm calculate the safety factor under the  
following conditions;

$$\text{Vertical sag} = 2.35\text{m}$$

$$\text{Wind pressure} = 1.5\text{kg/m run}$$

$$\text{Breaking stress} = 2540\text{kg/cm}^2$$

$$\text{Wt of conductor} = 1.125\text{kg/m run} \quad (8)$$

**OR**

- VIII.** (a) Define sag in a transmission line. List out five factors which affects the sag. (8)
- (b) Explain the different types of Transmission line parameters. (7)

**UNIT – IV**

- IX.** (a) Draw and Compare radial system and ring system of distribution. (8)
- (b) Explain the advantages of HVDC transmission system. (7)

**OR**

- X.** (a) Explain the main methods used for laying underground cables. (8)
- (b) Describe the construction of underground cable with the help of neat diagrams. (7)