TED (15) 4034
(Revision-2015)

A20-01656

Reg.No.....
Signature.....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE, APRIL-2020

ELECTRICAL POWER GENERATION,TRANSMISSION &DISTRIBUTION

[Maximum marks: 75] (Time: 2.15 Hours)

PART – A

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

I. (1). State the function of economizer in a steam power station.
(2). Define demand factor.
(3). Define Ferranti effect.
(4). State voltage regulation.
(5). Give the expression for determine the string efficiency. (3 x 2 = 6)

PART – B

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

II. (1). Differentiate conventional and non-conventional methods of power generation.
(2). Explain atomic power plant with a neat schematic layout.
(3). Differentiate the base load and peak load with the help of load curve.
(4). Define and explain the terms. (i). Load factor. (ii). Diversity factor.
(5). Explain the necessity of transposition in OH supply lines.
(6). Explain feeders, Distributers and service mains in an electric supply system.
(7). List and explain different cause of failure of insulators. (4 x 6= 24)

PART – C

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

UNIT –I

III. (a). Describe hydroelectric power station with the help of a neat schematic diagram. (8)
(b). List the factors governing the choice of location of a steam power station. (7)

OR

IV. (a). List the essential equipments in a steam power station and state the functions of each. (8)

(b). A 500 MW steam station uses coal of calorific value 32000 kcal/kg. Thermal efficiency of the station is 35% and electrical efficiency is 95%. Calculate the coal consumption per hour when the station is delivering its full rated output. Assume that 1kWh = 860Kcal. (7)

UNIT-II

V. (a). A generating station has the following data: Installed capacity = 200 MV; capacity factor = 52%; Annual load factor = 65%, Calculate (i) the minimum reserve capacity of the station and (ii) the kWh generated per annum. (8)

(b). Illustrate various costs involved when determining total cost of electrical energy Generated. (7)

OR

VI. (a). Explain different types of tariff systems used to determine the cost of electric energy. (8)

(b). The maximum demand of a consumer is 10 A at 240 V and his total energy consumption is 8760 kWh. If the energy is charged at the rate of 8 rupees per unit for 300 hours use of the maximum demand per annum plus 2 rupees per unit for additional units, calculate: (i). annual bill (ii) equivalent flat rate. Assume the load factor and power factor to be unity. (7)

UNIT-III

VII. (a). Describe the electrical and mechanical properties of community used conductor materials for overhead transmission lines. (8)

(b). A transmission line has a span of 210 meters between level supports. The conductor has a cross-sectional area of 1:3 cm^2, weighs 1270 kg/km and has a breaking stress if 4228 kg/ cm^2. Calculate the sag for a safety factor of 6, allowing a wind pressure of 132 kg per square metre of projected area. Determine the slant sag. (7)

OR

VIII. (a). Illustrate the performance characteristics of a single phase short transmission line. (8)

(b). Explain skin effect and list the factors affecting skin effect. (7)

UNIT-IV

IX. (a). Describe different distribution systems based on scheme of connection. (8)

(b). Describe the construction of underground cable with suitable diagrams. (7)

OR

X. (a). Explain the method employed for laying underground cable with the help of neat diagrams (8)

(b). Explain the methods used for grading in underground cables. (7)