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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, APRIL - 2024

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. Write any two disadvantages of Diesel power plant.
2. Define the term tariff.
3. List any two components of over head transmission line.
4. Define Ferranti effect.
5. Define 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. List any four factors to be considered while selecting site for nuclear power plant.
2. Define load factor and write its importance.
3. List the different types of tariffs.
4. Define skin effect and list out the factors depends on skin effect.
5. List three advantages and three disadvantages of AC transmission compared to DC transmission.
6. Explain any two method of cable laying with figure.
7. List the causes of insulation failure in over head system. (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) Draw the schematic diagram of thermal power plant and explain the functions of economizer and super heater. (8)

(b) Draw the schematic diagram of Hydroelectric power plant and explain the functions of penstock and surge tank. (7)

OR

IV. (a) Draw the layout of nuclear power plant and explain the functions of moderator and control rods. (8)

(b) List the advantages and disadvantages of Hydroelectric power plant. (7)

UNIT - II

V. (a) A refinery has a maximum demand of 100KW at 0.8 power factor with annual energy consumption of 25000 KWH. The tariff is Rs. 30 per KVA of maximum demand plus 1 Rs/KWH. Find the total annual energy bill. What will be the annual energy bill if power factor is improved to unity? (8)

(b) Briefly explain the advantages and disadvantages of interconnection of power systems. (7)

OR

VI. (a) Calculate the annual bill amount of a consumer whose maximum demand is 75 KW. PF = 0.75 lagging and load factor = 65%. The tariff used is Rs. 100 per KVA of maximum demand plus Rs. 1 per KWH consumed. (8)

(b) Explain the following terms

(i) Connected load (ii) Maximum demand (iii) Diversity factor (7)

UNIT - III

VII. (a) Explain different transmission line parameters. (8)

(b) A 220KV transmission line supported between same level supports having following data. Weight of conductor is 750 Kg/km, length of span is 200m, Tension is 900Kg. Calculate Height above which conductor should be supported if ground clearance needed is 6m. (7)

OR

VIII. (a) Explain the classification of transmission line based on length and voltage. (8)

(b) Define corona and methods to reduce corona. (7)

UNIT – IV

IX. (a) Explain the construction details of Under Ground cable with figure. (8)

(b) Explain radial and ring system of distribution. (7)

OR

X. (a) Explain two grading methods used in cables with figure. (8)

(b) Discriminate feeders, distributers and service mains. (7)
