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Reg.No............................

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, NOVEMBER - 2022

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. State the function of spillways in a hydro-electric plant.
2. Define load curve.
3. List any two types of Tariff.
4. State Sag in overhead lines.
5. What are the classification of cables are generally used for 3-phase services? (5 x 2 = 10)

PART – B

Maximum marks : 30

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

1. Draw the schematic arrangement of a Hydro-electric plant.
2. Water for a hydro-electric station is obtained from a reservoir with a head of 100 meters. Calculate the electric energy generated in kWh per cubic meter of water, if the Hydraulic efficiency be 0.86 and electrical efficiency 0.92.
3. Write notes on (a) Connected load (b) Maximum Demand (c) Demand factor
4. Explain Base load and Peak load with a load curve.
5. Define corona. What are the factors affecting corona?
6. List the advantages and disadvantages of Direct laying of underground cables.
7. What are causes of failure of insulators. (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 arrangement of nuclear(atomic) power station. (7)

(b) Write short notes on (i) Nuclear reactor (ii) Heat Exchanger (iii) Steam turbine (iv) Alternator (8)

OR

IV.(a) A Hydro electric generating station is supplied from a reservoir of capacity 5 x 10^6 cubic meters at a head of 200m. Find the total energy available in kWh, if the overall efficiency is 75% (7)

(b) Give the comparison of steam power plant and hydro electric power plant. (8)

UNIT-II

V. (a) A 100 MW Power station delivers 100 MW for 2 hours, 50 MW for 6 hours and shutdown for the rest of each day. It is also shut down for maintenance for 45 days in each year. Calculate the annual load factor. (7)

(b) Name and explain the different types of Tariff. (8)

OR

VI. (a) Explain the various types of load on the power stations. (7)

(b) A consumer has a maximum demand of 200KW at 40% load factor. If the Tariff is Rs.100/kW of maximum demand plus 10 paisa per kWh. Find the overall cost per kWh. (8)

UNIT-III

VII. (a) Classify and explain overhead transmission lines based on length and transmission voltage (7)

(b) Draw and explain the Ferranti effect in transmission lines. (8)

OR

VIII.(a) What are the advantages of high voltage DC transmission over high voltage AC transmission (7)

(b) Explain the method of Sag calculation when supports are at equal levels. (8)

UNIT-IV

IX. (a) Draw and explain feeders, distributors and service mains. (7)

(b) Explain the methods of distribution system according to scheme of connection. (8)

OR

X. (a) Make a comparison between OH and UG distribution system. (7)

(b) Define string efficiency. What are the methods of improving string efficiency. (8)

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