

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

ELECTRICITY GENERATION TRANSMISSION AND DISTRIBUTION

[Maximum Marks:75]

[Time: 3 Hours]

PART - A

I. Answer all the following questions in one word or one sentence. Each question Carries 'one' mark.

(9 x 1 = 9 Marks)

		Module Outcome	Cognitive level
1	The device in steam power plant which heats the feed water on its way to boiler by deriving heat from the flue gases is called.....	M1.01	R
2	What is the function of control rods in nuclear reactors?	M1.01	R
3	Define diversity factor.	M2.01	R
4	What is TOD tariff?	M2.04	R
5	The expression for sag when supports are at equal level is.....	M3.02	R
6	What is Ferranti effect in transmission line?	M3.03	R
7	Write the expression for string efficiency for a string of three suspension insulator.	M4.02	R
8	State the purpose of armouring in UG cable.	M4.03	U
9	Draw the symbol of current transformer used for single line diagram of substation.	M4.04	R

PART - B

II. Answer any eight questions from the following. Each question carries 'Three' marks.

(8 x 3 = 24 Marks)

		Module Outcome	Cognitive level
1	Write the importance of surge tank in hydroelectric plant with a neat sketch.	M1.01	U
2	List the factors to be considered for the selection of site for a nuclear Power station.	M1.01	R
3	Draw the schematic arrangement of diesel power plant.	M1.01	R
4	Water for a hydro-electric station is obtained from a reservoir with a head of 150m. Calculate the electrical energy generated per hour per cubic meter of water if the hydraulic efficiency be 0.8 and electrical efficiency 0.9.	M1.03	A
5	Define tariff and give any three objectives of tariff.	M2.04	U
6	A consumer has a maximum demand of 250kw at 50% load factor. if the tariff is Rs 100 per kw of maximum demand plus 30 paise per kwh. find the annual charge.	M2.04	A
7	What is skin effect in transmission line, write any two ways to reduce skin effects.	M3.03	U

8	Sketch the single line diagram of ring main distribution system.	M4.01	U
9	Describe three methods for improving string efficiency.	M4.02	U
10	Draw the construction of 3 conductor UG cable and label its parts.	M4.03	R

PART - C

Answer all the questions from the following. Each question carries 'seven' marks.

(6 x 7 = 42 Marks)

Module Outcome Cognitive level

III.	Draw the layout of steam power station with indicating all equipment and explain its working. OR	M1.01	U
IV.	Explain the concept of interconnected grid system and write the advantages of interconnected grid system.	M1.04	U
V.	Draw a daily load curve of power station, label the base load, maximum load in it and write importance of load curve. OR	M2.01	R
VI.	Explain the various cost involved when determining total cost of electrical energy generated.	M2.02	U
VII.	Explain the methods adopted for power factor improvement in distribution systems. OR	M2.03	U
VIII.	List the different types of tariff and explain the following tariffs with their advantages and disadvantages. (i)Two part tariff (ii)Flat rate tariff (iii)Block rate tariff	M2.04	R
IX.	Draw the single line diagram of a typical AC power supply scheme with electrical power generation, transmission and distribution and explain each section. OR	M3.01	U
X.	Write the advantages and disadvantages of AC and DC transmission of electric power.	M3.01	R
XI.	A transmission line has a span of 200m between level supports. The conductor has a cross sectional area of 2cm^2 the tension in the conductor is 2500kg. If the specific gravity of the conductor material is 10gm/cm^3 and wind pressure is 1.5kg/m length. Calculate the sag. OR	M3.02	A
XII.	Two towers of height 30m and 90m respectively support a transmission line conductors at water crossing. The horizontal distance between the towers is 500m. If the tension in the conductor is 1600kg and weight of conductor is 1.5kg/m , Find the minimum clearance of the conductor and water. Assume bases of the towers can be considered to be at the water level.	M3.02	A
XIII.	Explain with single line diagram the various DC distributors system scheme based on feeder connection. OR	M4.01	U
XIV.	Explain with suitable figures the methods of laying underground cables.	M4.03	U
