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

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 1 mark

		(9 x 1 = 9 Marks)	
		Module outcome	Cognitive level
1	Classify the sources of energy in the major two ways.	M1.01	U
2	Name the component to heat feed water in a thermal power station.	M1.01	R
3	State the function of moderator in a nuclear power plant.	M1.01	U
4	Write the equation for diversity factor.	M2.01	R
5	List any two power factor improvement methods.	M2.03	R
6	List two standard transmission voltages used in India.	M3.01	R
7	The difference in level between points of supports and the lowest point on the conductor is called	M3.02	R
8	Draw the symbol of a current transformer and potential transformer.	M4.04	R
9	Write the expression of string efficiency for a string of three suspension insulators.	M4.02	R

PART B

II. Answer any eight questions from the following. Each question carries 3 marks.

		(8 x 3 = 24 Marks)	
		Module	Cognitive
1	A hydro-electric generating station is supplied from a reservoir of capacity 5×10^6 cubic metre at a head of 200 metre. Find the total energy available in kWh if the overall efficiency is 75%.	M1.03	A
2	List any three advantages of interconnected grid system	M1.04	R
3	Outline the factors to be considered for the selection of site for a thermal power plant.	M1.02	U
4	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.	M2.01	А
5	List the disadvantages of low power factor.	M2.03	R
6	Explain Ferranti Effect.	M3.03	U
7	List the classification of overhead transmission lines based on length and voltage.	M3.01	R

8	Draw the sketch of radial system of distribution.	M4.01	U
9	List the methods for improving string efficiency.	M4.02	R
10	Explain capacitance grading in underground cables.	M4.03	U

PART C		
Answer all questions. Each question carries seven marks		

		(6 x 7 = 42 Marks)		
		Module outcome	Cognitive level	
III	Explain the working of a hydroelectric power station with neat sketch.	M1.01	U	
IV	Explain the working of a nuclear power station with neat sketch.	M1.01	U	
V	A power station supplies the following loads to various consumers: Industrial consumer = 1500 kW; commercial establishment = 800 kW; Domestic power = 100 kW; Domestic light = 500 kW; If the maximum demand on the station is 2500 kW and the number of kWh generated per year is 45 x 10 ⁵ , determine. (i) Diversity factor (ii) Annual load factor.	M2.01	A	
	OR			
VI	The maximum demand of a consumer is 25A at 220 V and his total energy consumption is 9750 kWh. If energy is charged at the rate of 20 paise per kWh for 500 hours use of maximum demand plus 5 paise per unit for all additional units, estimate his annual bill.	M2.04	А	
VII	With the help of vector diagram, explain the power factor	M2.03	U	
	improvement using static capacitors.			
VIII	Illustrate various costs involved when determining total cost of electrical energy generated.	M2.02	U	
IX	With the help of diagrammatic representation and equations, explain the significance of sag.	M3.02	U	
Х	Explain transposition of conductors with neat sketch and give its necessity.	M3.03	U	
XI	Summarize the main components of Overhead transmission	M3.01	U	
	lines.			
XII	Compare AC and DC transmission.	M3.01	U	
XIII	Explain the methods employed for laying underground cable with the help of neat diagrams.	M4.03	U	
XIV	Draw the single line diagram of a distribution substation and state the function of each component.	M4.04	U	