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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, NOVEMBER - 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	Name two examples for commercial energy.	M1.01	R
2	……..is a device which recovers heat from the exhaust gases of the turbine in a gas power plant.	M1.01	R
3	Name any two components of a nuclear power station.	M1.01	R
4	List any two types of electricity tariff schemes.	M2.04	R
5	Write the equation for Load factor.	M2.01	R
6	Name any two types of insulators used in overhead transmission line.	M3.01	R
7	List any two main components of a distribution system.	M4.01	R
8	Write the expression for determining the string efficiency.	M4.02	R
9	……is the main consideration in the design of a feeder.	M4.01	R

PART B

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

(8 x 3 = 24 Marks)

		Module outcome	Cognitive level
1	A hydroelectric generating station is supplied from a reservoir of capacity 5×10^6 cubic metres at a head of 150 metres. Find the total energy available in KWh, if the overall efficiency is 70%.	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	Explain Availability based tariff (ABT).	M2.04	U
5	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	A
6	Draw the diagrammatic representation of sag in an overhead transmission line.	M3.02	U

7	A transmission line has a span of 150 m between level supports. The tension in the conductor is 2000 kg. The weight of the conductor is 1.98kg/m and wind pressure is 1.5 kg/m. Calculate sag.	M3.02	A
8	Identify the causes of insulator failure in the power system.	M4.02	U
9	List the methods for improving string efficiency.	M4.02	R
10	List the methods for laying underground cables.	M4.04	R

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
	OR		
IV	Draw a labelled schematic diagram of a steam power plant.	M1.01	U
V	Calculate annual bill of a consumer whose maximum demand is 150 kW, pf = 0.8 lagging and load factor = 65%. The tariff used is Rs.70 per KVA of maximum demand plus 20 paise per kWh consumed.	M2.04	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	A
VII	Explain the various power factor improvement equipment.	M2.03	U
	OR		
VIII	Summarize the various costs of power generation.	M2.02	U
IX	Compare AC and DC transmission.	M3.01	U
	OR		
X	Illustrate the transposition of conductors and its necessity.	M3.03	U
XI	Summarize the main components of Overhead transmission lines.	M3.01	U
	OR		
XII	With neat sketch, explain skin effect and the factors affecting the same.	M3.03	U
XIII	Explain the types of line insulators used in power distribution system with basic sketches.	M4.02	U
	OR		
XIV	Illustrate the construction of a UG cable with neat sketch.	M4.04	U

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