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Daffodil International University

Department of Electrical and Electronic Engineering

Faculty of Engineering

Midterm Examination, Summer-2026

Course Code: 0713-227 | Course Title: Transmission and Distribution of Electrical Power

Section: A, B, C, D, E | Level-Term: L3-T1 | Teacher's Initial: SMP, SHS, AJA

Full Marks: 25 | Exam Date: June 29, 2026 | Time: 1 Hour 30 Minutes

There are **3 questions. Answer all of them.** COs on the right side indicate course learning outcomes.

Q1.	a)	**Discuss** the basic differences between AC and DC transmission systems.	CO1 C-2	03
	b)	**Explain** how high transmission voltage is economical in terms of conductor material.	CO1 C-2	03
Q2.	a)	**Show** that the generalized circuit constants for a medium transmission line Nominal Pi model satisfy the condition that $AD - BC = 1$. Where A, B, C, and D have their usual meaning.	CO2 C-4	04
	b)	An overhead 3-phase short transmission line delivers 5000 kW at 22 kV at 0·8 p.f. lagging. The resistance and reactance of each conductor are 5 Ω and 8 Ω respectively. **Determine**: (i) Sending End Voltage (ii) Sending End Power Factor (iii) transmission efficiency. **Draw** the phasor diagram for this problem.	CO2 C-3	05
Q3.	a)	The towers of height 30 m and 90 m respectively support a transmission line conductor at a water crossing. The horizontal distance between the towers is 500 m. If the tension in the conductor is 1600 kg, **find** the minimum clearance of the conductor and water and clearance mid-way between the supports. Weight of conductor is 1·5 kg/m. Bases of the towers can be considered to be at water level.	CO3 C-3	05
	b)	A 3-phase, 50 Hz transmission line 100 km long delivers 20 MW at 0·9 p.f. lagging and at 110 kV. The resistance and reactance of the line per phase per km are 0·2 Ω and 0·4 Ω respectively, while capacitance admittance is $2{\cdot}5 \times 10^{-6}$ siemen/km/phase. **Determine**: (i) the current and voltage at the sending end; (ii) efficiency of transmission. Assume the capacitance of the entire line is localized at the center of the transmission line.	CO2 C-3	05