



Daffodil International University
Department of Electrical and Electronic Engineering
Faculty of Engineering

Midterm Examination, Summer-2026

Course Code: 0713-227

Section: A, B, C, D, E

Full Marks: 25

Course Title: Transmission and Distribution of Electrical Power

Level-Term: L3-T1

Exam Date: June 29, 2026

Teacher's Initial: SMP, SHS, AJA

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 03
- b) **Explain** how high transmission voltage is economical in terms of conductor material. C-2 CO1 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 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 5Ω and 8Ω respectively. **Determine:** (i) Sending End Voltage (ii) Sending End Power Factor (iii) transmission efficiency. **Draw** the phasor diagram for this problem. C-3 CO2 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 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 0.2Ω and 0.4Ω respectively, while capacitance admittance is 2.5×10^{-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. C-3 CO2 05