



Daffodil International University
Department of Electrical and Electronic Engineering
Faculty of Engineering
Mid-Term Examination, Summer-2026

Course Code: 0533-111

Course Title: Physics

Section: A, B, C, D, E, F

Level-Term: L1-T1

by- Tanvir

Full Marks: 25

Exam Date: 1 July 2026

Time: 1.5 Hours

Note: There are three sets of questions in total. Answer all of them. Right hand margin indicates full marks.

- Q1.** (a) **Explain** coherent source. CO-1 [2]
(C2)
- (b) State the Zeroth law of thermodynamics and **describe** it. CO-1 [2]
(C2)
- Q2.** (a) **Express** the relation between pressure and volume of a gas in adiabatic process. CO-2 [4]
(C2)
- (b) **Show** that the change of entropy in an irreversible process is positive. CO-2 [2]
(C2)
- (b) **Estimate** the phase difference of the interfering light waves at a point x units away from the center of the screen in Young's double-slit experiment. CO-2 [3]
(C3)
- Q3.** (a) Two moles of a diatomic ideal gas ($\gamma = 1.40$) is compressed adiabatically from an initial state of $T_1 = 350$ K, $V_1 = 10.0$ L to a final volume $V_2 = 4.0$ L. **Calculate** the final temperature T_2 and the work done on the gas in joules. CO-2 [3]
(C3)
- (b) In Newton's ring experiment, a lens with $R = 1.15$ m is placed on a flat plate. The diameter of the 13th bright ring is 7.40 mm. **Calculate** the wavelength and the radius of the 9th dark ring? CO-2 [3]
(C3)
- (c) Interference fringes are produced at a distance of 1.23 m away by two slits situated 0.075 cm apart from each other. The 6th bright fringe is obtained 12 mm away from the central maxima. **Calculate** the wavelength of light. CO-2 [3]
(C3)
- (d) If 2.5 kg of ice at -7°C is transferred into vapour of 100°C , **calculate** the change in entropy. ($S_{\text{ice}} = 2.1 \text{ kJkg}^{-1}\text{K}^{-1}$; $S_{\text{w}} = 4.2 \text{ kJkg}^{-1}\text{K}^{-1}$; $L_f = 334 \text{ kJkg}^{-1}$; $L_v = 2260 \text{ kJkg}^{-1}$) CO-2 [3]
(C3)