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Daffodil International University
Department of Software Engineering
Faculty of Science & Information Technology
Final Examination, Spring 2026
Course Code: PHY 101 ; Course Title: Physics-I
Sections & Teachers: A-D(SH), E-H(SKS), I-L(RH), M-P(MHB)

Time: 2 Hrs **Marks: 40**

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.	**a.**	**Describe the following terms:** i. LASER ii. Total internal reflection. iii. Satellite navigation systems.	5+2 +3	CLO-1 Level-1
2.	**a.**	**Interpret** the principles of the photoelectric effect, using relevant equations and diagrams to explain its role in demonstrating the particle nature of light, such as in solar panels.	5	CLO-2 Level-2
	b.	When sunlight passes through two tiny holes or gaps, we see light and dark lines on the wall. **Estimate** the intensity of the bright and dark fringes formed in Young's double-slit experiment.	5	
	c.	**Describe** with a supporting diagram how Brewster's angle, Malus's law, and specific rotation relate to light behavior, and compare how their applications differ from the light control mechanisms used in polaroid sunglasses.	5	
3.	**a.**	The distance between the centers of two consecutive bright fringes in Young's experiment is 0.60 mm. The distance of the screen from the slit is 70 cm. The frequency of the light is 6×10^{14} Hz. i. **Calculate** the separation between the slit. ii. **Estimate** the distance of 7^{th} bright and dark fringes respectively from the central bright fringe? iii. At 21 mm distance from the central bright fringe, **predict** the nature of interference? Constructive or destructive?	7.5	CLO-3 Level-3
	b.	A light beam of 3.5×10^{-7} m wavelength is incident on a metallic plate of Nickel. The value of stopping potential found 3.8 V. i. **Calculate** the maximum velocity of photo electron. ii. **Calculate** the value of work function and threshold frequency. iii. **Examine** whether red light can generate photoelectric current on that surface or not? (wavelength of red light is 730 nm)	7.5	