International Islamic University Chittagong (IIUC)

Department of Electronic and Telecommunication Engineering

Mid-Term Examination

Program: B.Sc. (Engg.) | Semester: Spring 2023
Course Code: PHY-1101 | Course Title: Physics - I
Total Marks: 30 | Time-1.5 Hours

CLOs	Description	Bloom's Taxonomy Domain/Level
CLO: 1	**Demonstrate** an understanding of mechanics, waves, optics, heat and thermodynamics.	Cognitive
CLO: 2	**Apply** basic physics laws and formulae to complex cases like; Fly wheel, Elastic bending, forced oscillation, Compound Pendulum, Heat engine, Polarization etc.	Cognitive

1. a)	Illustrate your understanding on "radius of gyration."	2	U	CO1
b)	State and prove the conservation theorem of energy.	6	U	CO1
c)	Find the moment of inertia of a body of mass 1.2kg rotating about an axis passing through a point 10 cm away from the center of mass. Consider K= 13 cm.	2	Ap	CO2
2. a)	Compose a short note on "compound pendulum".	2	U	CO1
b)	Derive an expression for gravitational potential at a point outside due to a spherical shell.	6	An	CO1
c)	Estimate the time period of a pendulum oscillating about a pivot at a distance 2 cm away from the center of mass. Consider K=2.1 cm.	2	Ap	CO2
3. a)	Discuss shortly on "strain" and its types in case of elasticity.	2	U	CO1
b)	Explain Searle's method to determine Young's modulus of a wire of uniform cross-section.	5	An	CO1
c)	Briefly describe the limiting values of Poisson's ratio.	3	Ap	CO2

Or

3.a)	Interpret your idea about "modulus of rigidity".	2	U	CO1
b)	Derive the expression $\eta = \frac{1}{2(\alpha+\beta)}$, where the symbols have their usual meaning.	6	An	CO1
c)	A 2 kg weight is applied at the bottom of an elastic wire of length 1m and radius 0.02 cm. If the wire extends by 02 cm due to the weight, find Young's modulus.	2	Ap	CO2