Library

Fourth Semester Internal Examination, February 2026
Major Course in Physics
PHY4CJ204 Mechanics II

Time: 1 Hr

Max Marks: 35

Name: Class:	Marks Scored	Section A		Total Marks
		Section B		
		Section C		

Section A

(Each question carries 3 marks, Max marks for section – 7)

1. What are central forces? Prove that angular momentum is a constant for central force.
2. Define the Quality factor (Q factor) of a harmonic oscillator and discuss its significance.
3. Differentiate between standing waves and travelling waves.

Section B

(Each question carries 6 marks, Max marks for section – 18)

4. A mass of 0.25kg is attached to a spring of force constant 1N/m. The mass is displaced 0.15m from its equilibrium point and released with zero initial velocity. Evaluate the total energy of the oscillator.
5. An underdamped harmonic oscillator has k=2 N/m, m=1kg and b=0.1kg/s. How many oscillations does the system make before the amplitude decreases to 1/e of its initial value.
6. Determine the ratio of amplitudes of reflected and incident wave (A_r/A_i).
7. Show that standing waves can be expresses as a special case of Traveling waves.

Section C

(Answer any one question, Each question carries 10 marks)

8. Obtain the expression for energy of a standing wave in a string of length L.
9. Discuss the motion of a damped harmonic oscillator. Discuss the three cases of damping.