Simple Harmonic Motion (SHM) – Worksheet

Name: ___ Class/Section: __ Date: ___

Instructions:

1. Complete all sections carefully.
2. Show all working for numerical questions.
3. Tick, match, or write answers in the spaces provided.

Section 1: Definitions (Fill in the blanks)

1. The central point where the object rests is called __
2. The maximum distance the object moves from equilibrium is called __
3. The motion that repeats itself over time is called __
4. The force that brings the object back toward equilibrium is called __

Section 2: Multiple Choice

1. Which of the following is an example of SHM?
2. [ ] A ball rolling down a hill
3. [ ] A pendulum swinging
4. [ ] A car moving on a straight road
5. [ ] Water flowing in a river
6. What happens to the time period if the mass of a mass-spring system increases?
7. [ ] Decreases
8. [ ] Increases
9. [ ] Stays the same
10. Which statement is correct?
11. [ ] Amplitude affects the period of SHM
12. [ ] Time period depends only on mass (for spring) or length (for pendulum)
13. [ ] Restoring force is away from equilibrium

Section 3: Matching

Match the term with its correct description:

Term	Description
Amplitude	_____
Equilibrium	_____
Oscillation	_____
Restoring Force	_____

Section 4: Numerical Questions

1. Mass-Spring System: A mass of 0.5 kg is attached to a spring with spring constant 200 N/m. Find:
2. Time period $T = 2\pi\sqrt{(m/k)}$ = ____
3. Frequency $f = 1/T$ = ____
4. Simple Pendulum: A pendulum has a length of 1.5 m. Find:
5. Time period $T = 2\pi\sqrt{(L/g)}$ = ____
6. Frequency $f = 1/T$ = ____

Section 5: Diagram Activity

Instructions: Label the diagram of a mass-spring system: - Amplitude - Equilibrium - Maximum displacement

(Draw the diagram in the space below or attach an image if digital.)

Section 6: Concept Questions

1. Why does SHM repeat itself?
2. What happens to the frequency if the length of a pendulum is quadrupled?
3. Does amplitude affect the time period? Explain.

Optional Formula Reference:

$T = 2\pi\sqrt{(m/k)}$, $T = 2\pi\sqrt{(L/g)}$, $f = 1/T$