Wave Dynamics Assessment

Student Name: _____ **Class:** _____

Student ID: _____ **Date:** {{DATE}}

Assessment Details

Duration: 90 minutes **Total Marks:** 100

Topics Covered:
- Wave Propagation
- Energy Transfer
- Scientific Observation
- Experimental Analysis

Instructions to Students:

1. Read questions carefully and demonstrate scientific thinking.
2. Show all calculations and reasoning.
3. Diagrams and visual representations are encouraged.
4. Focus on process and understanding, not just final answers.
5. Use additional pages if needed for detailed explanations.

Section A: Wave Visualization [20 marks]

Question 1 [4 marks]

Which wave type transfers energy without transferring matter?

A) Mechanical Wave
B) Transverse Wave
C) Electromagnetic Wave
D) Longitudinal Wave

Question 2 [4 marks]

In a wave, amplitude represents:

A) Wave speed
B) Energy transferred
C) Maximum displacement
D) Wave frequency

Section B: Energy Transfer Investigation [40 marks]

Question 3 [15 marks]

Design a home experiment to demonstrate wave energy transfer. Include:

a) Experimental setup description [5 marks]

b) Predicted energy transfer mechanism [5 marks]

c) Potential sources of experimental error [5 marks]

Section C: Analytical Reflection [40 marks]
Question 4 [20 marks]

Compare and analyze wave behaviors in different mediums:

a) Describe wave transmission in solid, liquid, and gas mediums [8 marks]

b) Explain how medium properties affect wave energy transfer [8 marks]

c) Propose a real-world application of wave energy transfer [4 marks]