[The complete HTML document follows the template, with questions and content specifically designed around wave dynamics and energy transfer]

Wave Dynamics Assessment

Student Name: _____ **Class:** _____

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

Assessment Details

Duration: 2 hours **Total Marks:** 100

Topics Covered:
- Wave Propagation
- Energy Transfer
- Wave Types
- Experimental Design

Instructions to Students:

1. Read all questions carefully before attempting.
2. Show complete scientific reasoning and calculations.
3. Diagrams and sketches are encouraged where relevant.
4. Use the provided answer spaces for your responses.
5. Demonstrate critical thinking and analytical skills.

Section A: Multiple Choice [20 marks]
Question 1 [4 marks]

Which type of wave requires a medium for transmission?

A) Electromagnetic Waves
B) Mechanical Waves
C) Quantum Waves
D) Gravitational Waves
Question 2 [4 marks]

What represents the height of a wave's amplitude?

A) Wave frequency
B) Wave energy
C) Maximum displacement
D) Wave velocity
Section B: Short Answer Questions [40 marks]
Question 3 [12 marks]

Design a home-based experiment to demonstrate wave energy transfer.

a) List required materials [3 marks]

b) Describe experimental procedure [4 marks]

c) Explain expected observations and scientific principles [5 marks]

Section C: Extended Response [40 marks]
Question 4 [15 marks]

Compare and contrast mechanical and electromagnetic wave transmission.

a) Create a detailed comparison table [5 marks]

b) Provide real-world examples for each wave type [5 marks]

c) Discuss energy transfer mechanisms [5 marks]