Year 11 Physics - Worksheet 1
Thermodynamics: Particles, Temperature Energy Flow

Student Name: _____ ID: _____

Module 3

Part 1: Defining Concepts (Knowledge Nodes N1, N4, N2)

1. **Define** the following terms precisely using your understanding from the lesson:

- Thermodynamics:
- Temperature (in terms of particle motion):
- Thermal Energy:
- Heat:
- Conduction:
- Convection:
- Radiation (thermal):
- Thermal Equilibrium:

[Literacy Focus: Precise scientific terminology - N1, N4, N2]

2. Using the particle model, **explain** why a metal spoon left in hot soup quickly becomes hot, while a wooden spoon takes much longer. Mention the key heat transfer mechanism involved. [N4 Understand]

3. Give one real-world **example** for each type of heat transfer where it is the *primary* mode of transfer:

- Conduction Example:
- Convection Example:
- Radiation Example:

[N4 Understand]

Part 2: Observations Explanations (Knowledge Nodes N1, N4)

4. From the PhET Simulation ("Energy Forms and Changes"):

- Describe what happened to the **motion** of the water/brick particles when heat energy was added. [N1 Understand]

- What happened to the **temperature** reading as heat was added? [N1 Understand]

- What is the relationship between the average kinetic energy of the particles and the temperature of the substance? [N1 Understand] */Numeracy Focus: Qualitative interpretation of simulation visuals - N1/*

5. Consider the demonstrations of heat transfer:

- How does energy transfer differ fundamentally between conduction (e.g., metal rod) and radiation (e.g., heat lamp)? [N4 Understand]

#MarkSense Quiz 1

Instructions: Choose the best answer for multiple choice questions. Write brief answers for short answer questions in the space provided.

Student Name: _____ **ID:** _____

1. Temperature is a measure of the _____ kinetic energy of particles in a substance. [N1]

A. Total

B. Average

C. Potential

D. Rotational

Answer: _____

2. Heat transfer through the movement of fluids (liquids/gases) is primarily: [N4]

A. Conduction

B. Convection

C. Radiation

D. Advection

Answer: _____

3. Explain why putting a lid on a hot cup of coffee keeps it warm longer, mentioning at least TWO heat transfer mechanisms. [N4, N2 conceptual link] (2 marks)