

Core Concepts: An **atom** is the smallest particle of an element that can exist. An **element** is a substance consisting of only one type of atom. A **compound** is a substance formed when two or more elements are chemically bonded together. A **mixture** consists of two or more substances (elements or compounds) that are not chemically bonded together.

Section A: Key Terms & Basic Concepts

A1. Match the following keywords to their correct definitions by drawing lines.

Keyword	Definition
Atom	A substance made of two or more elements chemically bonded together.
Element	The central part of an atom, containing protons and neutrons.
Compound	A substance consisting of only one type of atom.
Mixture	The smallest particle of an element that can exist.
Nucleus	Two or more substances not chemically bonded together.

A2. Complete the following sentences using the most appropriate scientific terms.

- (i) Atoms are made of a central _____ containing _____ and _____, with _____ orbiting around it.
- (ii) The particles in the nucleus that have a positive charge are _____, while those with no charge are _____.
- (iii) In a compound, the elements are _____ together, whereas in a mixture, they are _____.

Section B: Core Concepts & Explanations

B1. Distinguish between an atom and an element.

B2. Explain how a compound is different from a mixture.

B3. Describe the structure of an atom, including the relative charges and masses of its subatomic particles.

B4. Draw a simple diagram to represent a molecule of water (H_2O) and explain why it is classified as a compound.

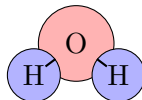


Figure 1: A simple representation of a water molecule.

Section C: Exam Application & Extended Writing

C1. The diagrams below show different arrangements of particles. Identify whether each diagram represents an element, a compound, or a mixture.

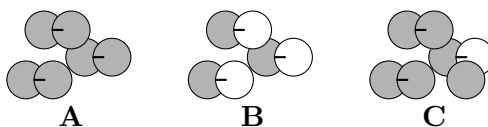


Figure 2: Particle arrangements.

(i) Diagram A:

(ii) Diagram B:

(iii) Diagram C:

C2. (6 marks) Explain how the properties of a compound are typically different from the properties of the elements from which it is formed. Use an example to illustrate your answer.
