CHALLENGE CHEMISTRY

For Senior Secondary Schools

WORK BOOK 1

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Contents

CHAPTER ONE
NATURE OF MATTER

1. Chemistry deals with the determination of the nature, properties and uses of non-living matter, **True/False**
2. The two types of changes which the naturally existing non-living matter, and the man-made scientific substances may undergo when subjected to conditions which they usually do not encounter are:(a) .....(b).....
3. Physical properties are properties associated with physical changes, examples are: boiling point, melting point, density, hardness malleability, crystalline form as well properties which may be detected by the senses such as colour, odour. **True/False**
4. A physical change is one which is easily reversible and in which no new substance is formed.

   State three examples of physical changes.

   (A).....

   (b).....

   (C).....

5. DIFFERENCES BETWEEN PHYSICAL AND CHEMICAL CHANGES

Filling in the blank spaces in the table below

Physical change	Chemical change
1. It is easily reversible	.....
2.	New substances are produced
3. There is no change in the mass of substances involved.	.....
4.	A considerable amount of heat change is involved.

ELEMENTS, COMPOUNDS AND MIXTURES

6. An element is a substance, which cannot be split into simple units by any known chemical process. Elements are grouped into.

(i) Metals

(ii) Metalloids

(iii) Non-metals

Mention the names of ten elements.

(a)..... (b)..... (c).....

(D)..... (e)..... (f).....

(g)..... (h)..... (i).....

(j).....

7. Classify the following substances as an <u>element</u>, a mixture or a <u>compound</u>.

(i) Lime stone
(ii) Diamond
(Iii) Sand
(Iv) Soil
(v) Urine
(vi) Bronze
(vii) Sugar
(viii) Gold
(ix) Blood
(x) Clay
(xi) Urea
(xii) Copper
(xiii) Soap
(xiv) Milk
(xv) Air
(xvi) Neon
(xviii) Iron
(xviii) Crude oil

ELEMENT	MIXTURE	COMPOUND
(i)	(i)	(i)
(ii)	(ii)	(ii)
(iii)	(iii)	(iii)
(iv)	(iv)	(iv)
(v)	(v)	(v)
	(vi)	(vi)
	(vii)	(vii)

8. **DIFFERENCES BETWEEN MIXURE AND COMPOUNDS**

Fill in the spaces in the table below.

Mixtures	Compounds
(a).....	It is always homogenous
(b) The constituents are not chemically bounded together.	.....
(c).....	The component elements cannot be separated by physical methods, chemical processes of separation are necessary.
.....	.....
.....	.....
(d) It cannot be represented by a chemical formula since the constituents can be together in any ratio by mass.	.....

CHAPTER TWO

ALTERNATIVE TO PRACTICAL 1

EXPERIMENT 1: HEATING OF PLATINUM METAL IN AIR

This was achieved by holding a loose coil of platinum wire, using a pair of tongs in a Bunsen flame under observation, it was seen that there was a white-hot glow of the metal. But the appearance was unchanged after cooling.

1. Questions:

(a) Name the types of change that has taken place.....

(b) State your reason.....

EXPERIMENT 11: THE CHARRING OF SUGAR

Place some sugar in a crucible, cover it with a watch-glass and heat it under observation, it was found that the sugar burns to give a black residue and drops of water which condenses under the watch-glass

2. Question:

(a) Identifying the type of change.....

(b) State your reason.....

(c) Identify the black residue.....

EXPERIMENT III: DISSOLUTION OF COMMON SALT (Nacl) IN WATER:

To some distilled water in a beaker add some common salt and stir the mixture. The salt gradually dissolved, forming a solution. On

evaporation of the solution, the common salt reappears in its original white solid form.

3. Question:

(a) Name the type of change that has taken place

.....

State your reason .....