THE PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT

BUNDA DISTRICT COUNCIL

FORM TWO PRE-NATIONAL EXAMINATION
032 CHEMISTRY
MARKING SCHEME SEPTEMBER 2023

SECTION A (15 MARKS)

1.

i	ii	iii	iv	v	vi	vii	viii	ix	x
B	D	B	B	C	C	C	B	C	D

(@1 = 10 marks)

2.

LIST A	i	ii	iii	iv	v
LIST B	D	I	H	C	G

(@1 = 5 marks)

SECTION B (70 MARKS)

3. (a)Air is a mixture

REASONS

i. Air components can be separated by physical means
ii. when air mixes no sound or heat is observed
iii. The composition of air varies from place to place
iv. No simple chemical formula of air @ 01 mark

(b) i. iron rod will not get rust because distilled water does not dissolved oxygen

ii. Painted nail will not get rust because paint prevent oxygen and water from coming into contact with nail

iii. There will be no rusting reaction because dissolved oxygen has been removed by boiling the water

----there will be the layer of oil prevent oxygen in from dissolving in water

(c) Methods of preventing rusting

- Painting

This is coating of item with the special paint pigment

For example: doors, windows which are made of iron materials

- Alloying

-this involves mixing of molten iron with other molten metals to form alloy which does not get rust. E.g.; stainless steel (knife, cooking utensils)

4 (a) 01 mark @

i. Isotopes ii. Electrons iii. Metalloids iv. Chromatography

(b) Importance of Changes of States of Matter (Any three Points 02 marks @)

i. Water cycle

ii. Refrigeration/ Air Condition-Water change to vapourabsorb energy (heat) from the surround and final cause cooling effect

iii. Metallurgy –It involves purification of metals from their ores and manufacture of alloys

i. Steam engines

ii. Drying of materials

5. (a) i. Atom (01 mark)

ii. sub-atomic particles (01 mark@)

- Protons
- Neutrons
- Electrons

iii. The mass of an atom is said to be contributed by neutrons and protons not electrons …because mass of electron is very small such that it is almost neglected (01 mark)

(b) Shortcomings of the Dalton's atomic theory(01 mark@)

i. Dalton did not explain the structure of the atom, he could not explain how elements differ from each other

ii. Dalton did not explain why atom combine with each other

iii Also he did not explain the force that binds atoms together in a molecule

(c) X= 100%-98.89% (01 mark)

X= 1.11%

Data given (01 mark)

Mass of carbon _12= 12g

%composition of carbon-12=98,89%

%composition of carbon-14=1.11%

Mass of element (carbon -14)=14

Soln

Relative atomic mass= SUM of(mass of element X %composition of the element)

100

$12\times98.89/100 + 14\times 1.11/100 = 12.02\ 11.8668 + 0.1554 = 12.0222$

Relative atomic mass=12.0222 (*2Marks)*

6. (a) (01 mark@)

i. availability

ii. affordability

iii. high energy value/high heat content
iv. easy to transport and store

Data given (01 mark)
◦Initial temperature, θ1= 24.7℃ = 24.7 + 273 = 297.7 k

◦Final temperature, θ2= 68.5 ℃ = 68.5 + 273 =341.5 k

◦Mass of biodiesel, M = 56g = 0.056 kg

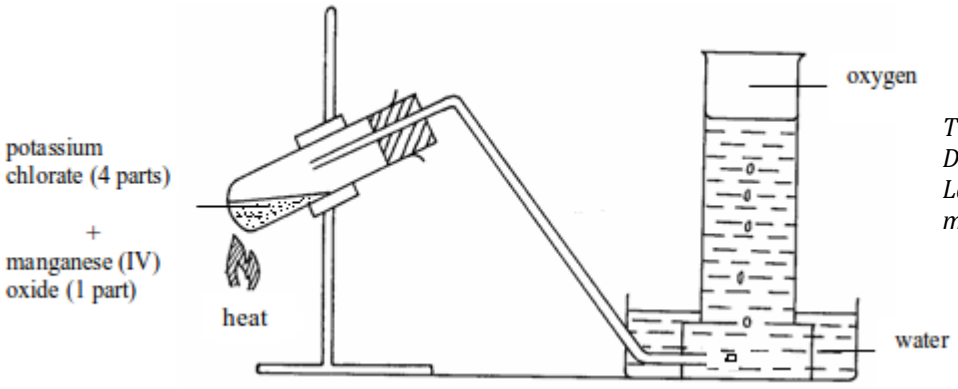
◦Volume of water, V =12 litres= 0.12 m3

◦Heat energy value of biodiesel, E = ?

Solution
◦From the formula,
◦But, Mass of water, m = density x volume (01 mark)

=1000 Kg/m3 × 0.012m3= 12 kg
m =12 kg
E = $\boldsymbol{mc\Delta\theta M}$(01 mark)
E = 12x4.18 × (341.5−297.7)**0.056**
E = 392,32 KJ/Kg (01 mark)
Heat energy value of biodiesel is 392,32 KJ/Kg . (01 mark)

7. (a) i. oxygen (01 mark)
ii. Methods for preparation of oxygen
-decomposition of hydrogen peroxide by using manganese (iv) oxide as a catalyst (01 mark)
-heating potassium chlorate in the presence manganese (iv) oxide as a catalyst (01mark)
iii. Preparation of oxygen from potassium chlorate



Title: (00½ mark)
Diagram: 03 marks
Labels: (3 × 0½ = 1½ marks)

iv. The equation for the reaction

Potassium chlorate $\xrightarrow[Heat]{Catalyst}$ Potassium + oxygen chloride

(b) Two other uses of oxygen (01 mark@)
i. used for burning and support vital combustion process
ii. used in mining and purification of metals

8. (a)

Table i – v

	I	II	III	IV	V	VI	VII	VIII
1								
2			B				C	
3	D	A					E	
4								

(00½@= 02½ marks)

vi. A – Mg
B – B
C – F
D – Na *(00½@= 02½ marks)*
E – Cl

vii. Periodicity *(01 mark)*

(b) Significance of chemical symbol

i. To quickly understand the elements being referred to instead of memorizing the full names
ii. Enables the writing of chemical equations in abbreviated forms instead of writing each element in full names
iii. Helps to distinguish one element from another *(01@= 04 marks)*
iv. Helps in knowing the name of elements, for example, Cu means copper

9. (a) i. Homogeneous mixture is the one that mix uniformly in composition, appearance and properties while heterogeneous mixture has different compositionappearance and properties. (0.5 mark@)

ii. Miscible liquids mix completely while immiscible liquids do not mix completelywith each other. (0.5 mark@)

(b) (i)Physical change and chemical change (01 mark@)

Change in container A	Change in container B
i. New substance is formed	No new substance is formed
ii. change is not easily reversible	change is easily reversible
iv. heat is given out or absorbed	No heat is given out or absorbed

(02 marks@)

SECTION C (15 MARKS)

10. *(02.5 marks@)*

i. *Domestic use (daily use)*

- Drinking
- Cooking food
- Cleaning our surrounding
- Washing our bodies
- Washing our clothes

ii. *Transportation use*

- Boats and ships used to transport people
- Boats and ships used to transport goods

iii*. Recreation use (leisure)*

- Used for swimming
- Used Sporting fishing
- Ocean water used for scuba-diving

iv. Mining

- Used to carry away impurities.
- Used as solvent to extract mineral

v. Energy

- Moving water used to generate electricity (HEP)

vi. Construction

- Contraction of buildings used to mix sand and cement.
- Contraction of road it used to compress the sand

vii. Fishing

- It used for fishing
- Used for artificial fish pond