FORM 2
CHEMSITRY
END YEAR 2025

MARKING SCHEME

1. Define the term Chemistry? (1mks)

Chemistry is a branch of science that deals with the study of structure properties and composition of matter and changes that matter undergoes.

2. An atom of element x is represented as shown below.

$$^{23}_{11}X$$

a) Using dots or crosses diagrams draw the atom of element x. (2mks)=3

b) Show the electronic configuration of a stable ion formed by element x. (1mk)=4

2.8

3. Define the following terms. (3mks)=7

a) Crystallization

Is the process of obtaining crystals from a saturated solution.

b) Radical

Group of atoms that exist and react as a unit with a net positive charge

c) Mixture

A combination of 2 or more substances which ca be separated by physical means.

4. Study the diagram below and answer the questions that follow.

								E
A	B		C				D	
	G		I				H	
F								

a)

(i) Write down the electronic configuration of element E. (1mk)=8

2

(ii) Ion formed by element H. (1mk)=9

2.8.8

(iii) Formula or compound formed when G combines with D. (1mk)=10

CD_2

b) By giving reason, identify the type of bond formed in a (iii) above? (2mks)=12

Ionic bond, there is complete transfer of electrons from one atom to another

c) Explain the differences in the melting points of A and B. (2mks)=14

B has a higher melting point than A; Atomic radius in B is smaller than that in A leading to stronger metallic bonds in B than in A which are more difficult to break.

d) Compare the reactivity of element D and H. (2mks)=16

D is more reactive than H both react by electron gain; atomic radius of D is smaller than that of H. Hence D attracts electrons to its outermost energy level strongly than H. Accept D needs less energy to gain electrons in its outermost energy level than H.

5. Name that particles that are responsible for electricity conductivity in ? (3MKS=19

a) Melts?

Mobile ions

b) Solids?

Delocalized electrons

c) Aqueous solutions?

Mobile ions

6. (a) Give the chemical name of rust? (1mk)=20

Hydrated iron (iii) Oxide

(b) Name 3 conditions necessary for rusting. (3mks)=23

Moisture
Oxygen
iron

7. Distinguish the following terms: (6mks)=29

a) Allotropes and isotopes

Allotropes are different forms of an element at the same physical state.

b) Isotopes

Atoms of the same element with same atomic number but different mass number.

c) Hydroscopic and deliquescent salts.

Hygroscopic substances are those that absorb moisture from the atmosphere but do not dissolve to form solution

Deliquescent substances are those that absorb water from the atmosphere and dissolve to form a solution

d) Thistle funnel and separating funnel

Thistle funnel is used when delivering liquid and do not have a tap.
Separating funnel is used to separate immiscible liquids and has a tap.

8. Give two substances which can be separated by sublimation (2mks)=31

Iodine and common salt

9. Is air a mixture or a compound? Explain. (2mks)=33

Air is a mixture of several gases which can be separated by physical means

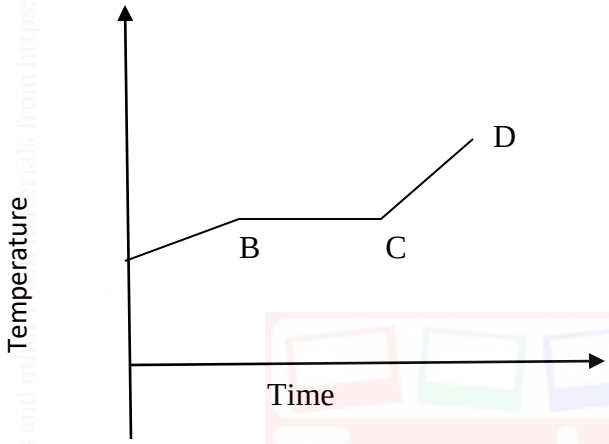
10. When magnesium is reacted with air, there is around 90% change in volume of air. With the help of chemical equations. Explain this. (4mks)=37

Magnesium reacts with both oxygen and Nitrogen to form Magnesium Oxide and Magnesium nitrude

$2mg(s) + oxygen\ (g) \longrightarrow 2mgo(s)$

$3Mg(s) + N_2(g) \longrightarrow Mg_3N_2(s)$

11. The graph below shows the changes that occur when solid A is heated. Study it and answer the questions that follow.



a) What happens between points A and B. (2mks)=39

Temperature increases steadily. Heat energy supplied increases kinetic energy of particles making them to vibrate more vigorously.

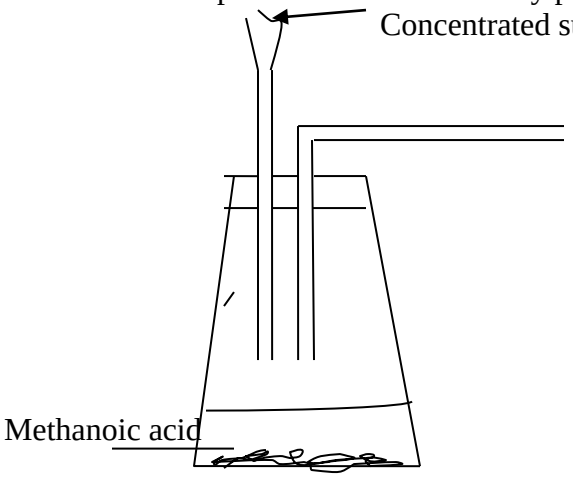
b) What happens between Point B and C. (2mks)=41

Temperature remains constant. Heat energy supplied is used to weaken forces of attraction holding solid particles together as result solid changes to liquid.

c) What are the effects of impurities on the melting point and boiling point of substances? (2mks)=43

Impurities lower the melting point and increase the boiling point.

12. The set up below shows laboratory preparation of carbon (ii) oxide gas.



a) Complete the diagram to show how carbon (ii) oxide gas is collected. (4mks)=47

b) Explain why carbon (ii) oxide gas is collected as shown above. (1mk)=48
It is slighting soluble in water

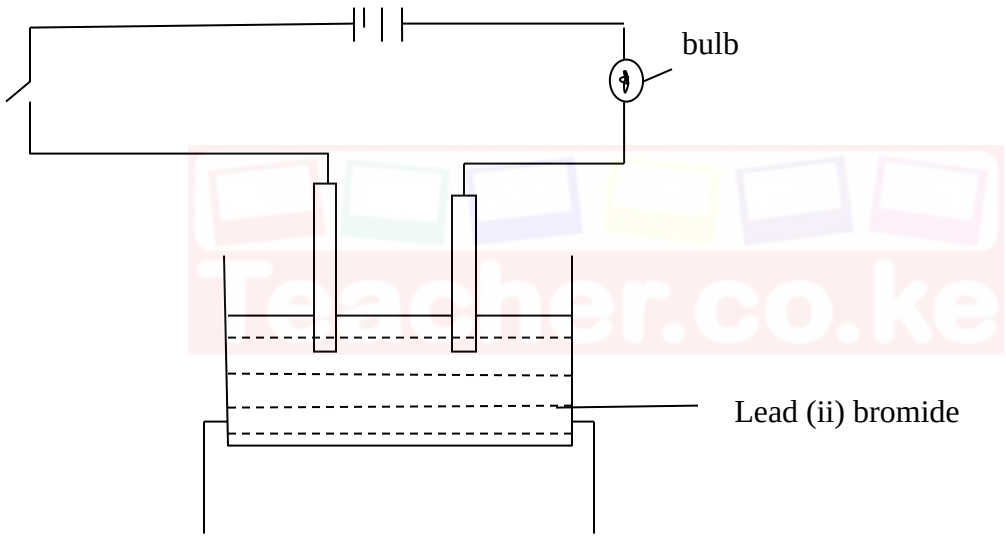
c) Write a chemical equation for the reaction above. (1mk)=49

$$HCOOH\ (S) \xrightarrow[\text{Sulphuric acid}]{\text{Conc}} Co(g) + H_2O\ (l)$$

d) Name 2 other methods that ca be used to prepare carbon (ii) oxide gas. (2mks)=51
Dehydration of ethanedioic acid
Passing carbon (iv) oxide gas over heated charcoal

e) A charcoal Jiko should be left burning in poorly ventilated room. Explain. (2mk)=53
It produce carbon (ii) oxide which causes suffocation. It permanenting combines with haemoglobin to form carboxyl haemoglobin

13. Study the set up below and answer the questions that follow.



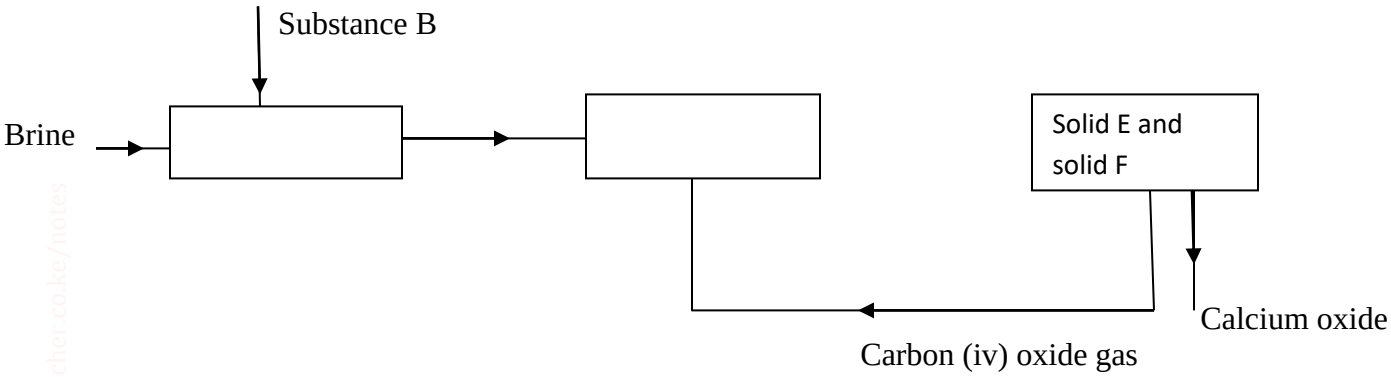
a) State one condition missing in the set up (1mk)=54
heat

b) What happens to lead (ii) Bromide and the bulb when the condition above is available. (2mks)=56
lead (ii) bromide will be decomposed to lead ions and bromine ions. Lead metal will be deposited at cathode while bubbles of Bromine gas will be seen at the cathode. Bulb will also light.

c) Write equations for the reactions occurring at (2mks)=58
(i) The cathode
$$Pb^{2+}(l) + 2e^- \longrightarrow Pb(s)$$

(ii) The anode
$$2Br^-(l) \longrightarrow Br_2(g) + 2e^-$$

14. The figure below shows a section of the solvary process.



a) Name substance B. (1mk)-59

Ammonia gas

b) Where should the solvary process be carried out? Explain (2mks)=61

Near a river, to cool the Carbonator

c) Name solids E and F. (2mks)=63

E- coke

F limestone/calcium carbonate

d) Name 3 substances recycled in the Solvary process. (3mks)=66

Water

Ammonia gas

Carbon(iv)oxide

15. Give the method used to separate components of crude oil. (1mk)=67

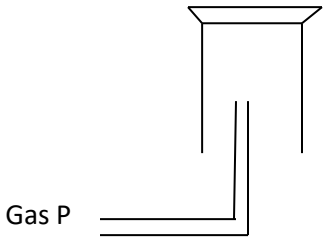
Fractional distillation

16. Give 2 applications of crystallization (2mks)=69

Extraction of salt from salty water

Extraction of sugar from sugar cane

17. Give the name of the following method of gas collection. (1mk)=70



Upward delivery(downward displacement of air.