FORM ONE CHEMISTRY END OF YEAR EXAM – 2019
TIME: 1 ½ HOURS

Answer all the questions in the spaces provided.

1. What is Chemistry? (1 mk)

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

2. Give three advantages of studying Chemistry. (3 mks)=4

It is a career subject.
Manufacture of detergents
Manufacture of food to fight diseases.

3. Give the functions of the following laboratory apparatus. (5 mks)=9

(i) Crucible – **Used to heat substances that require strong heating.**

(ii) Desicator – **Used for drying or keeping substances free from moisture.**

(iii) Dropping funnel – **Used to add controlled amounts of liquids into reaction vessels.**

(iv) Thistle funnel – **Used for delivering liquid substances**

(v) Tongs - **Used to safely hold corrosive or hot solids.**

4. Define the following terms: (4 mks)=13

(i) Drug – **A substance artificial, or manufactured that when taken alters the normal functioning of our bodies.**

(ii) Drug abuse – **Use of drugs for the purpose which it was not meant for Underdose/overdose of drugs.**

(iii) Prescription – **Instructions given by a medical officer on how to use drugs.**

(iv) Indicator – **A substance that shows a definite different colour in acids and a different colour in a base.**

5. Give the differences between luminous flame and non-luminous flame. (5 mks)=18

Luminous	Non-luminous
(i) Has four zones	**Has 3 zones**
(ii) Moderately	**Very hot**
(iii) Produce soot	**Does not produce soot**
(iv) Bright yellow	**Pale blue**
(v) Large and wavy	**Short and steady.**

6. (a) After use, a non-luminous flame should be put off or adjusted to a luminous flame. Explain. (2 mks)=20

Because a non-luminous flame is not easily seen, it can cause fire accident.

(b) State any 6 safety rules in the laboratory. (6 mks)=25

(i) Do not eat or taste anything in the laboratory.
(ii) Do not directly in reaction vessels.
(iii) Keep windows and doors open.
(iv) Wash your hands before living the laboratory.
(v) Label all chemicals to avoid confusion.

7. Name three substances that undergo sublimation. (3 mks)=28

Aluminium chloride
Benzoic acid
Dry ice.

8. Give the methods that can be used to separate the following **mixtures:- (3 mks)=31**

(i) Iron filings and sulphur - Use of magnet.

(ii) Sodium chloride and aluminium chloride - Sublimation

(iii) Common salt and water - Evaporation

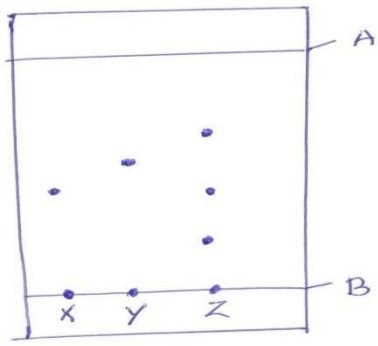
9. (a) What is fractional distillation? (1 mk)=32

Method used to separate miscible liquids with different but close boiling points.

(b) Give two applications of fractional distillation. (2 mks)=33

Distillation of crude oil.
Separation of liquefied air.

10. The diagram below shows a chromatogram obtained when spots of pigments X, Y and a mixture of Z were placed on an absorbent material and allowed to dry. The paper was then dipped in a solvent and results obtained as shown below.



(a) Name A and B. (2 mks)=35

A - Solvent front
B - Baseline

(b) Which pure pigment was a component of Z. (1 mk)=36

X

(c) What are the factors that determine the distance moved by the spots? (2 mks)=38

Solubility in the solvent
Absorption/stickness on the absorbent material.

(d) Why is water not used as a solvent? (1 mk)=39

It does not dissolve the pigments.

11. Give the names of the compounds formed by the following elements: (3 mks)=42

(a) Carbon and oxygen - Carbon (iv) oxide.
(b) Sodium and sulphur - Sodium sulphide
(c) Sodium, carbon and oxygen- Sodium carbonate

12. Complete the following word equations:- (4 mks)=45

(a) Sodium carbonate + dil sulphuric acid – **(Sodium sulphated + water + Carbon (iv) oxide)**

(b) Sodium + water - **Sodium hydroxide + Hydrogen gas)**

(c) Sodium hydrogen carbonate + dil hydrochloric acid - (**Sodium chloride + water + Carbon (iv) oxide)**

(d) Magnesium + Dil hydrochloric acid – **Magnesium chloride + hydrogen gas)**

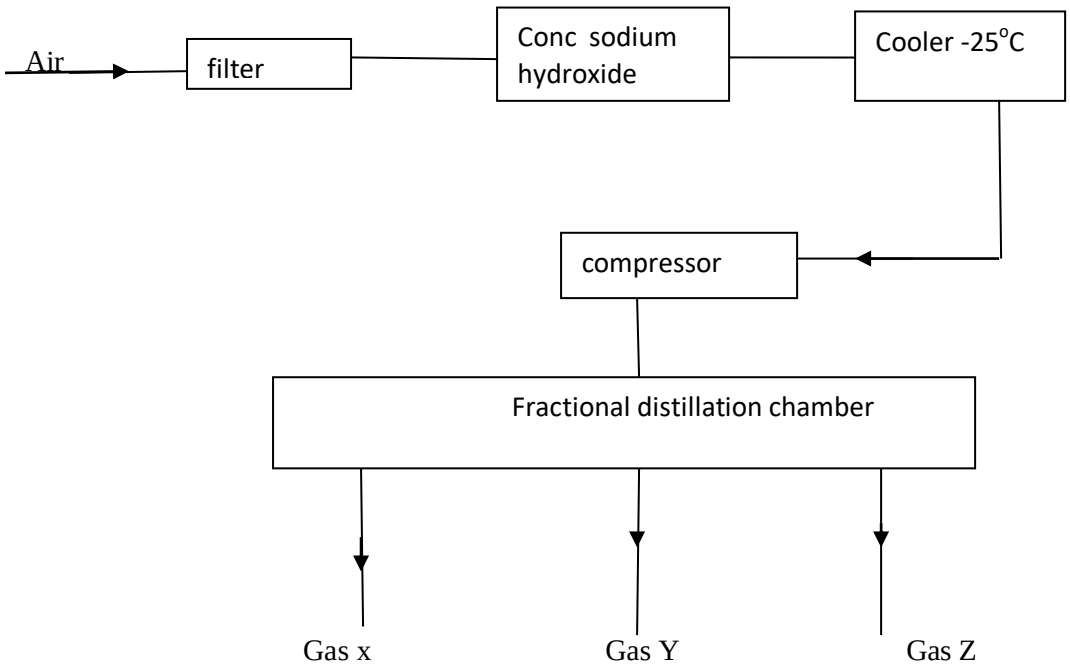
13. Give two differences between acids and bases. (2 mks)=47

Acids	Bases
(a) Ph below 7	**Ph above 7**
(b) Sour in taste	**Bitter taste.**

14. Give two uses of bases. (2 mks)=49

Magnesium oxide and hydroxide – Manufacture of anti acid tablets.
Calcium oxide and hydroxide – Manufacture of tooth paste.

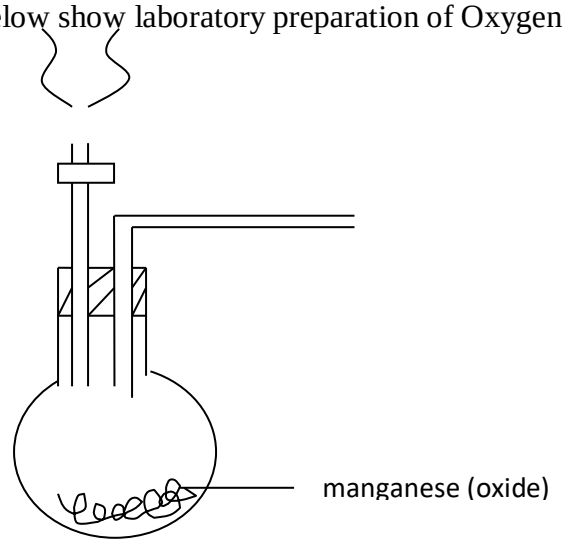
15. The diagram below shows the fractional distillation of liquefied air. Study it and answer the questions that follow.



a) Name the substances removed in the filtration chamber.
(1mk) =50
Dust particles

b) Name gases X, Y and Z.
(3mks)=53
X – Oxygen
Y – Nitrogen
Z - Argon

16. The diagram below show laboratory preparation of Oxygen gas.



a) Complete the gas to show how oxygen gas is collected. (2mks)=55
Collected over water.

b) Why is oxygen gas collected as shown above. (1mk)=56
It is slightly soluble in water.

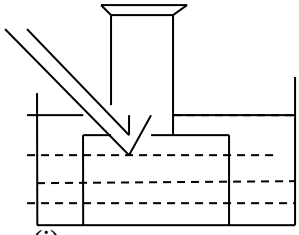
c) Write a word equation for the equation of the reaction occurring above. (1mk)=57
$2H_2O_{2(l)} \longrightarrow 2H_2O_{(l)} + O_{2(g)}$

d) Give 3 uses of oxygen gas. (3mks)=60
In hospitals for patients with breathing difficulties.
Used as one of the reactants in the fuel cells.
Its mixture with acetylene is used in welding.

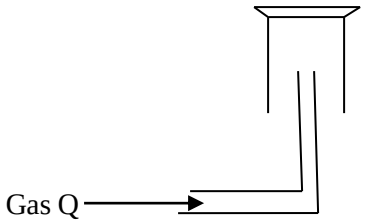
17. With the help of word equations identify the products of heating candle wax. (3mks)=63
Candle wax is a hydrocarbon
Hydrogen + Oxygen ⟶ Water vapour
Carbon + Oxygen ⟶ Carbon (iv) oxide.

18. Name the following methods of gas collection
(3mks)=66

Gas P

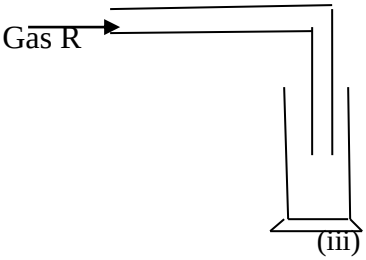


(i)



(ii)

Gas R



(iii)

Gas P – over water **Gas Q = upward delivery** **(iii) Gas R – Downward delivery**

19. Give 2 uses of hydrogen gas.
(2mks)=68

In the haber process during the manufacture of ammonia.

Hardening of oils to form fats; process called hydrogenation.