CHEMISTRY

FORM O NE

SECTION A *(44 Marks)*

1. What is a pure substance?{1 mark}

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..... Define the following terms.

a) Radical. {1 mark}

b) Acid. {1 mark}

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2. State **TWO** reasons why most of the chemistry apparatus are glassware. {2 marks}

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3. Complete the table below.{2 m arks}

Parameter	**Apparatus used to measure**	**Units**
Volume		
Temperature		

4. Name any **TWO** industries that have benefited from the knowledge of chemistry. {2 m arks}

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5. What do the following laboratory signs m ean?

a)b)

d).

c).

6. State w hy it is important to adhere to the following laboratory rules.

{2 m arks}

a) Label all the chemicals

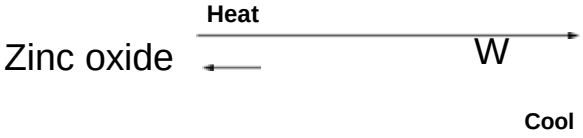
.....

. ..... b) N ever eat anything in the laboratory.

.....

. ..... W rite a chemical equation showing the reaction between sodium m etal and excess oxygen. {1 m ark}

7. Study the equation below.



a) What is the colour of substance W

.....{½ m ark}

b) What type of change is represented in the above equation? {½mark}

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c) Give another example of the change named in b) above.{1mark}

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8. a). N ame any **FOUR** apparatus that are necessary to carry out fractional distillation of a m ixture containing D istilled w ater and E thanol

in the laboratory. {2 m arks}

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b).Which of the two components of the m ixture w ill form the first fraction.

Explain.{1 m ark}

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c). State one industrial application of fractional distillation.{1mark}

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9. Study the equation below.

Hydrated copper (II) sulphate 

white Solid T + Colourless

Liquid H

a) Identify the;

i).White solid T .....

ii). C olourless liquid H .....{1 m ark}

b) If H ydrated C opper (II) Sulphate had FIVE w ater m olecules, w rite the chemical equation for the above reaction. {1 m ark}

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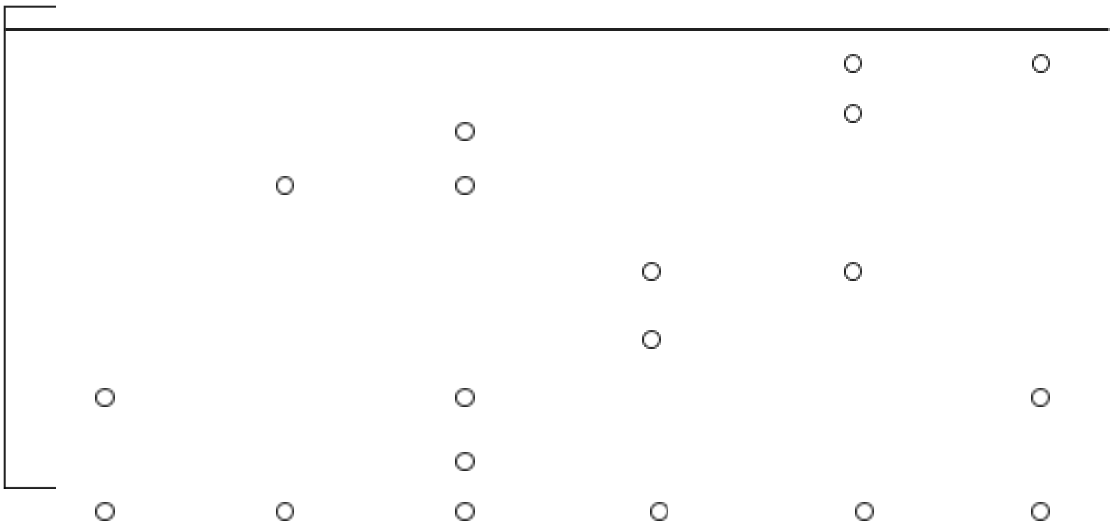
10. During the 2012 London O lympic G ames, samples from four D ecathlon participants (Morgan, Bolton, Jimmy and Jade) w ere taken a nd tested for presence of two illegal steroids A and B. Paper c hromatography w as used for the test.



Steroid A Steroid B Morgan Bolton Jimmy Jade

a) Which athlete(s) tested positive for the illegal steroid? {1 m ark}

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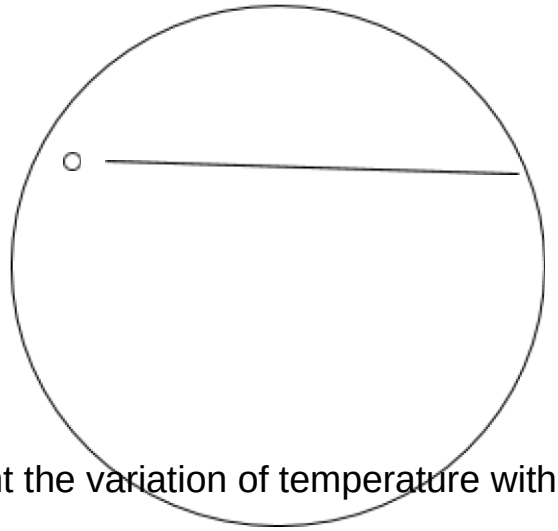
b) On the filter paper representation below, draw the results for the Bolton.{2



11. The curves below represent the variation of temperature with time when marks}

pure and impure samples of a solid w ere heated.

Solid K

Temperature in ˚C

Solid F

Time in seconds

a) Which of the two curves shows the variation in temperature for pure solid? Explain.{2 m arks}

b) If 300 grams m ore of the pure substance w as added to the sample, show on the graph the time that the sample the pure substance w ill boil. {½ m ark}

c) On the graph above, indicate the boiling point of the pure substance.{½ m ark}

12. Arnold, a student from Starehe Boys' C entre Situated 3050m above t he sea level boiled 100cm3 of pure w ater. Another student, Annette, f rom Mombasa 0 m etres above the sea level boiled the same volume of pure water.

i. Which of the two students took the longest time to boil w ater? {1mark}

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ii. Explain your answer in d, i) above? {1 m ark}

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13. Describe the steps you w ould take to obtain common salts from sand that w ere m ixed accidentally salt.{3 m arks}

14. Complete the table below. {2 marks}

	Solid	**Liquid**	**Gas**
Shape			Indefinite
Volume		Fixed	Not fixed
Density	Very high	High	
Packing of molecules	Tight	Apart	Far apart

15. a). D raw a w ell labelled diagram showing how electrical conductivity of

a given solid can be tested in the laboratory.

b). N ame one non- m etal that conducts electricity{1 m ark}

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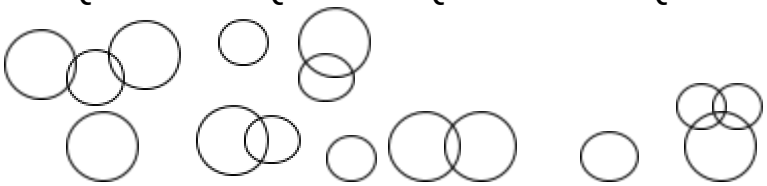
16. Study the diagrams below.

Q1 Q 2 Q 3 Q 4 Q 5



Which of the following sets of drawing clearly illustrates?

{2 m arks}

a) Hydrogen m olecule (H_2)

.....

b) Ammonia m olecule (NH_3)

.....

c) Helium m olecule (He)

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d) Mixture of Sodium C hloride (NaCl) and H elium (He)

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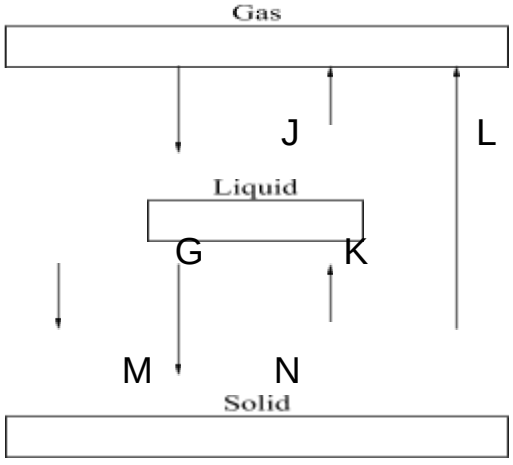
17. The figure below shows the changes that take place between states of matter.



a) Give the names of the processes J and K.

{1 m ark}

J .....

K .....

b) Name one substance that can undergo process K w hen left in an open container. {1 m ark}

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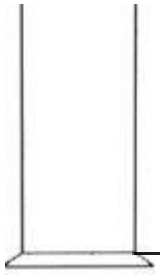
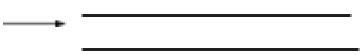
18. Below are two m ethods of collecting gases in the laboratory.

Gas in



Gas Jar Method G1

Method G 2



G as in

a) Name the m ethods represented by G 2.

..... {½ m ark}

b) Name an example of gas that can be collected using G 1.

..... {½ m ark}

SECTION B : *(56 Marks)*

19. What is the m eaning of the following?

c) i). D rug. {1 m ark}

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ii). D osage. {1 m ark}

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iii). D rug addiction. {1

mark}

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d) Differentiate between O ver the C ounter (OTC) drugs and Prescription D rugs.

{1 m ark}

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e) Mr. R udisha w ent to a doctor w ho sent him to a pharmacy to pick some drugs. The pharmacist w rote on the m edicine packaging 2X3. C learly s tate what 2X3 m eant.{1 m ark}

t

f) State two reasons w hy it is impor antto adhere to the doctor's prescription. {2 m arks}

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g) State **THREE** common effects that tobacco smoking and alcohol c onsumption have. {3 m arks}

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t .

20. The diagram below show the apparatus used to prepare oxygen in the laboratory.

Black Solid X

a) Name the reagents X and Y {2 marks}

Y X

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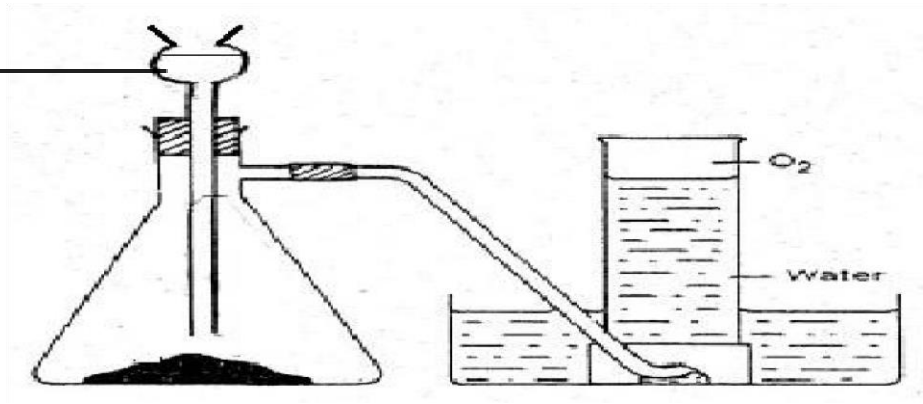
b) Why is reagent X used yet reagent Y can decompose to produce O xygen gas? {1 m ark}

Y



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c) Why is it possible to collect oxygen gas using the m ethod above?{1 m ark}

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d) State **TWO** other physical proper iesof O xygen gas {2 m arks}

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e) Describe the test you w ould carry to prove that the gas collected is O xygen. {2 m arks}

f) Write the chemical name and chemical formulae of rust.

{2 m arks}

t .

Name .....

Formula.....

g) The diagram below illustrates one of the m ethods used to prevent rust, s tudy it carefully.

Zinc Stripes

Iron m etal

h) Which m ethod of rust prevention is shown in the diagram above?

{1 m ark}

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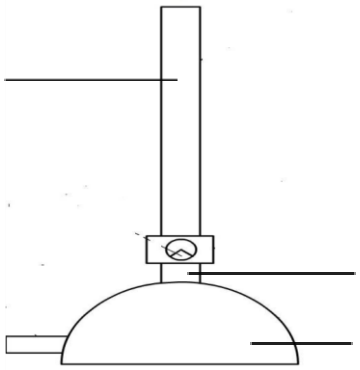
i) Why is it possible to prevent rust using the m ethod named in g) above?

{1 m ark}

.....

21. Study the diagram below.



a)The apparatus is used to heat substances in the laboratory.

t . .

i. Name the parts m arked w ith le tersQ , R , S and T (Name on the d iagram)

{2 m arks}

ii. Describe **FIVE** Steps followed w hen lighting the apparatus above.

{2½ m arks}

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iii. On w hat flame should the apparatus be left w hen not being used in the laboratory? {½ m ark}

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iv. State **TWO** reasons for the answer given in iii) above.

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{2 m arks}

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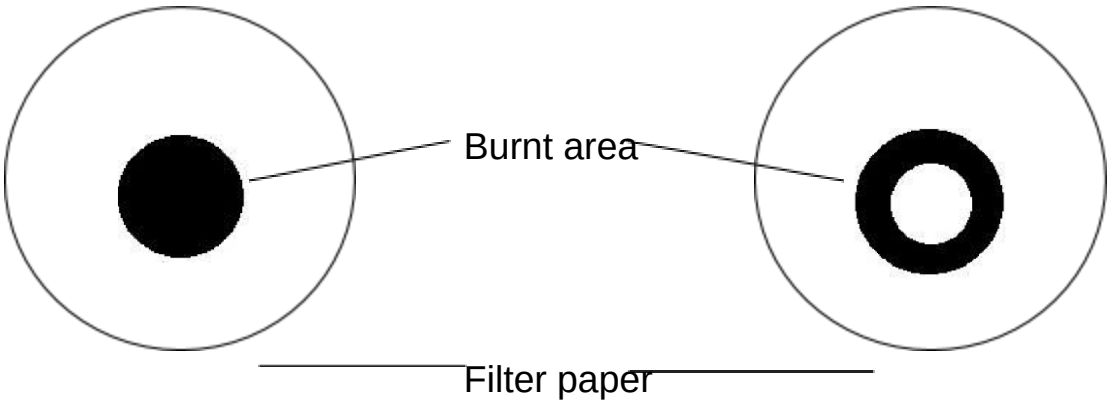
b)The diagram below shows the appearances of two pieces of filter papers placed on different parts of a particular flame of a Bunsen burner.



i. Which flame of the Bunsen burner w as used for the experiment?

{1mark}

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ii. What conclusion can you m ake from the above experimental results?

{2 m arks}

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22. a). D efine the following.

i. Element. {1

mark}

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ii. Compound. {1 m ark}

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b). W rite the chemical symbols for the following elements.

{1 m ark}

i. Chlorine ..... ii). Sodium

.....

c). W rite the name of the elements represents by the following chemical symbols. {1 m ark}

i). K .....

ii). F.....

d). H ow **m any** elements m ake up the following compounds?

i. $Na_2CO_3.NaHCO_3.2H_2O$ {1 mark}

.....

ii. $NaHCO_3$ {1 mark}

.....

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e). W rite the chemical formulae of the following chemical compounds. (Show your w orking)

i. Aluminium phosphate. {1 mark}

ii. Copper nitrate. {1 mark}

iii. Magnesium sulphate. {1 mark}

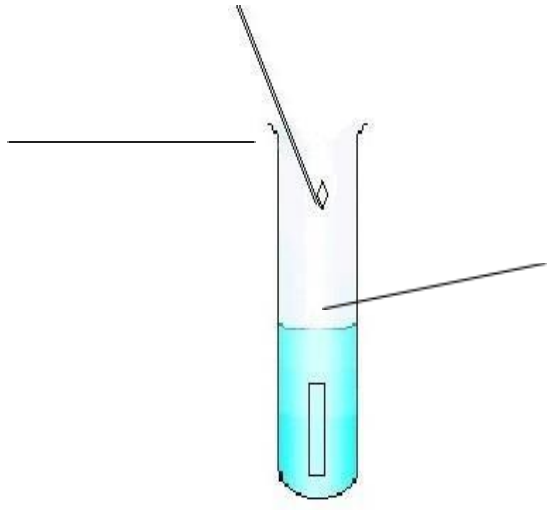
f). W rite the number of atoms of each element present in the following compounds.

i. H_2SO_4 {1 m ark}

ii. $CuSO_4 \cdot 10H_2O$ {1 mark}

iii. Na_2CO_3 {1 mark}

23. The diagram below shows the action of dilute acids on a m agnesium ribbon.



a) State any **TWO** observations m ade from the above set up.

{2 m arks}

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b) Write a chemical equation for the reaction taking place between the acid and the m etal.

{1 m ark}

c) The following is a list of some pH values; 2, 4, 5, 7, 9 and 13. C omplete the table below indicating the appropriate pH values.

{2 m arks}

Substance	**pH Value**
Dilute hydrochloric acid	
Wood ash Solution	
Orange juice	
Distilled w ater	

d) State one advantage of using the universal indicator over flower extract indicators.{2 m arks}

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e) What is a “neutralization reaction”? {1 mark}

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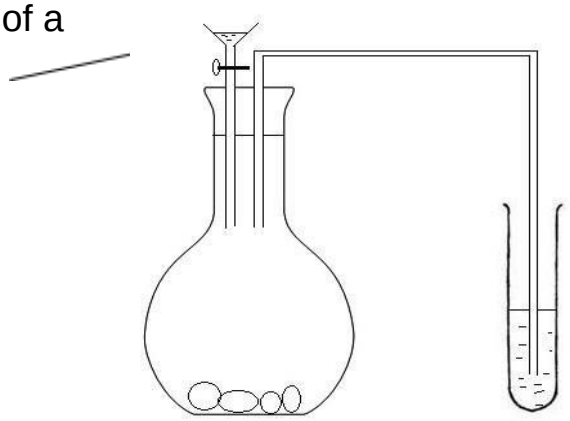
f) In another experiment students reacted sulphuric (VI) acid w ith solid P w hich is a compound of m agnesium. A colourless solution Q w as formed w ith

production of a colourless gas Z.

H2so4



When the colurless gas Z w as bubbled in lime w ater, it formed a w hite precipitate.

i. Identify colourless gas Z.

{1 m ark}

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ii. Identify compound P. {1 mark}

.....

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iii. Write the chemical formula of compound P. {1 m ark}

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iv. Name colourless solution Q . {1 mark}