

Name: Index No:

Candidate's signature.....

Date.....

KAKAMEGA NORTH SUBCOUNTY JOINT EXAMINATIONS KCSE Trial Exam

233/1
CHEMISTRY
PAPER 1
JULY 2018
2 Hours

INSTRUCTIONS TO CANDIDATES

- Write your name and index number in the space provided
- Answer **All** the questions in the space provided
- Mathematical tables and electronic calculators may be used
- All working **must** be clearly shown where necessary.

For Examiner's Use Only

Section	Question	Maximum Score	Candidates Score
A	1 – 28	80	

This paper consists of 9 printed Pages

*Candidates should check the question paper to ensure that all the pages are printed as indicated
and no questions are missing*

1. a) What name is given to the process by which alcohol is formed from carbohydrates (1mk)

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b) Using electrons in the outermost energy level, draw the dot (.) and cross(x) diagrams for the molecule of H_2O and NH_4^+ . (H =1, O =8, N=7 atomic number)

I) H_2O (1mk)

II) NH_4^+ (2mks)

2. Carbon (ii) oxide is described as “silent killer”

(a) State **one** physical property of carbon (II) Oxide that makes it “silent killer”. (1mk)

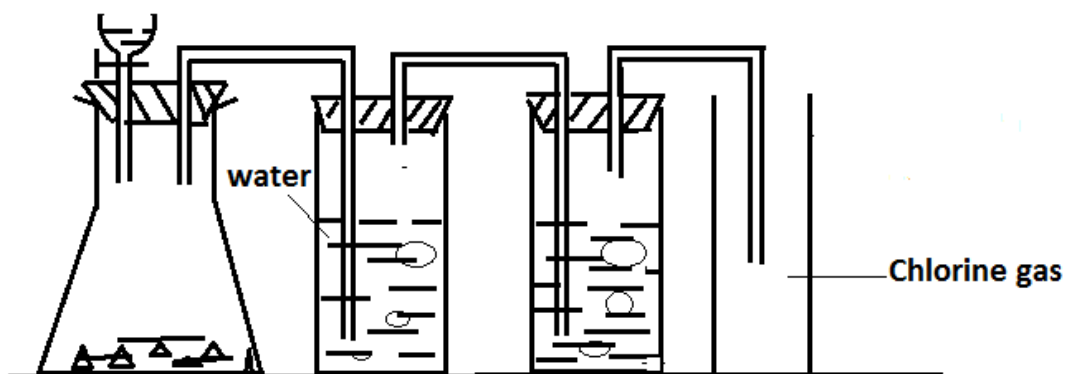
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b) State and explain **one** chemical property that makes carbon (II) oxide poisonous to human beings. (1mk)

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3. Chlorine gas can be prepared using the apparatus shown below



(a) Name the reagent in the dropping funnel (1mk)

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(b) What is the function of the water in the wash bottle (1mk)

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(c) (i) Name the method of gas collection used ($\frac{1}{2}$ mk)

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ii) What physical property of the gas is suggested by the method of gas collection used ($\frac{1}{2}$ mk)

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4. Distinguish between the terms deliquescent and efflorescent as used in chemistry (2mks)

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5. Analysis of a compound showed that it had the following composition.

69.42% Carbon, 4.13 % Hydrogen and the rest Oxygen

a) Determine the empirical formula of the compounds (3mks)
(C =12.0, H =1.0, O =16.0)

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6. A water trough, aqueous sodiumhydroxide, burning candle, watch glass and a graduated gas jar were used in an experimental set up to determine the percentage of active part of air.

Draw a labeled diagram of the set up or the end of the experiment. (3mks)

7. In terms of structure and bonding, explain why the melting point of oxygen is much lower than that of sodium (3mks)

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8. Bottles of sodium carbonate, sodium chloride and sugar have lost their labels. A student prepares and tests an aqueous solution of a sample from each bottle. The results obtained are as follows in the table below. Complete the table by filling the correct label for each bottle (3mks)

BOTTLE	PH	Electrical Conductivity	Correct Labels
1	7	Conducts	
2	7	Does not Conduct	
3	10	Conducts	

9. The label below gives atomic numbers of elements respectively by letters A,B,C and D

Element	A	B	C	D
Atomic Number	15	16	17	20

a) Name the type of bonding that exists in the compound formed when A and D reacts (1mk)

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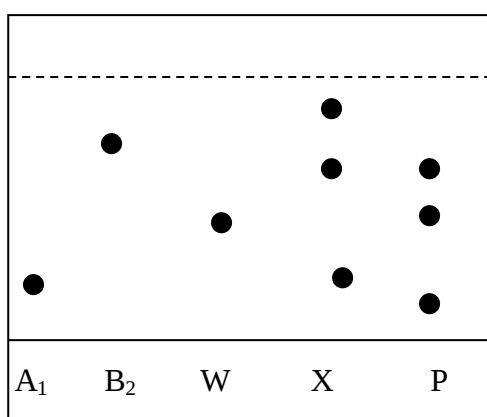
b) Select letters which represent the most reactive non-metal. Give a reason for your answer (2mks)

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10. Sample of urine from three participants **W**, **X** and **P** at an international sports meeting were spotted onto a chromatography paper alongside two from illegal drugs, **A₁** and **B₂**.

A Chromatogram was run using methanol. The figure below shows the chromatogram.



a) Identify the athlete who had used an illegal drug (1mk)

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b) Which drug is more soluble in methanol (1mk)

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11.a) State Grahams law of Diffusion

(1mk)

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(b) The molecular masses of gases P and Q are 32 and 88 respectively. If the diffusion of P through a porous material is $12\text{cm}^3\text{s}^{-1}$, calculate the rate of diffusion of gas Q through the same material. (2mks)

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12. When a student was stung by a nettle plant, a teacher applied an aqueous solution of ammonia to the affected area of the skin and the student was relieved of the pain. Explain (2mks)

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13. How does a rise in temperature affect the following:

(i) Rate of a reaction

(1mk)

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(ii) Position of a chemical equilibrium

(1mk)

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14. Draw and name the possible isomers in the compound with the formula C_5H_{12}

(3mks)

15. A compound has an empirical formula of CH_2O and a relative molecular mass of 180. Work out its molecular formula (3mks)

(C =12, H =1, O =16)

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16. Complete the table below by filling the missing information. (3mks)

Symbol of Particle	Number of protons	Electronic Configuration	Number of Neutrons
Al	13		14
F^-		2.8	10
Be^{2+}	4		9

17. State and explain the change in mass that occur when the following substances are separately heated in open crucibles

a) Copper Metal

(1½mks)

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b) Copper(ii)nitrate

(1½mks)

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18. An element represented as X has 16 neutrons. Draw the electronic structure for the ion of element X

19. a) State Charles Law as applied to ideal gases

(1mk)

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b) Gas occupies a volume of 400cm^3 at a temperature of 500K and pressure of 5 atmospheres . What will be the temperature of the gas when the volume is 100cm^3 and pressure is 0.25 atmospheres ? (2mks)

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20. Calculate the concentration in moles/litre of potassium hydroxide which contains 11.2g of solute in 50cm^3 of solution ($\text{K} = 39, \text{O} = 16, \text{H} = 1$) (3mks)

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21. Starting with aluminum sulphate describe how a solid sample of aluminum hydroxide could be prepared. (3mks)

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22. Iron (II) sulphate is prepared by adding excess iron filings into a dilute acid. The unreacted filings are then filtered off. The filtrate is evaporated to dryness

(a) Write the systematic name of the acid used (1mk)

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(b) What indicates that the reaction is over? (1mk)

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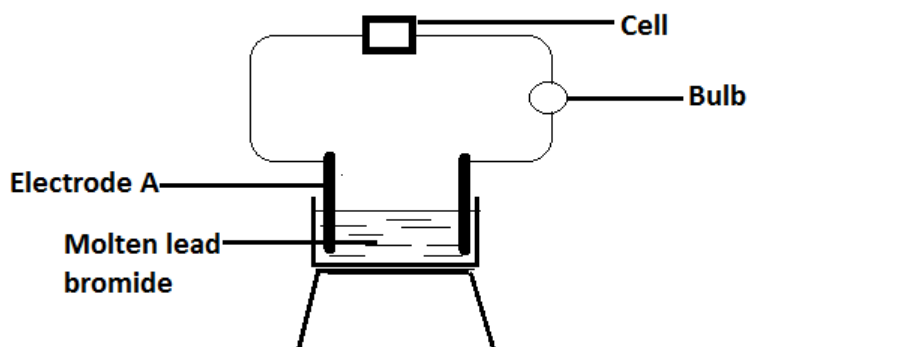
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(c) What is the colour of the filtrate? (1mk)

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23. The set-up below was used to investigate the effect of an electric current on a molten lead (II) bromide



(a) The bulb lit for a while then went off. Explain this observation.

(1mk)

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(b) A red gas was formed at electrode A while the bulb was still lit. Using this observation label the terminals of the cell.

(1mk)

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(c) Write an equation to show the formation of the product at the other electrode.

(1mk)

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24. i) Name **two** crystalline allotropes of carbon

(2mk)

ii) What is allotropy?

(2mks)

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25. Use the information given below to answer the questions that follow.

Solution	G	H	I	J	K
PH	1.5	6.5	13.0	7.0	8.0

a) Which solution would be used to relieve a stomach upset caused by indigestion? (1mk)

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b) Which solution is likely to be :

i) Dilute Sulphuric Acid

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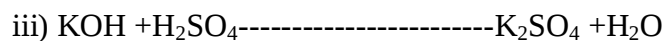
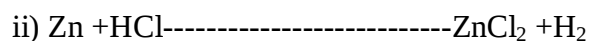
ii) Sodium hydroxide solution

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26. Classify the following processes as either physical or chemical change (3mks)

Process	Change
Sublimation	
Neutralization	-----
Fractional Distillation	-----

27. Balance the following equations (3mks)



28. With the help of a well labeled diagram, draw a set-up of an arrangement of assembled apparatus that can be used to prepare dry hydrogen gas, including the appropriate reagents. (3mks)

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