Name:……Index no ……..
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School…… Candidate's sign ….
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Date:
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233/1
CHEMISTRY
FORM THREE
PAPER 1
OCTOBER 2019
TIME: 2 HOURS

MUSALI SECONDARY SCHOOL INTERNAL EXAMINATION

Kenya Certificate of Secondary Education (K.C.S.E.)

233/1
CHEMISTRY
FORM THREE
PAPER 1
OCTOBER 2019
TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES:

- *Write your **name** and **index number** in the spaces provided above.*
- *Answer **All** the questions in the spaces provided below each question.*
- *All working **MUST** be clearly shown where necessary.*
- *Sign and write the date of examination in the spaces provided above.*
- *Electronic calculators may be used*
- ***This paper consists of 8 printed pages.***
- ***Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing***

For Examiner's Use Only

Question	Maximum score	Candidate's score
1- 28	80	

1. The table below shows information about elements K, L, M, P,R and V

Element	Group	Electron configuration of ion
K	VI	2,8,8
L	VI	2,8
M	II	2,8
P	III	2,8
R	I	2,8
V	VII	2,8

a)Write down electron configuration of elements K and M.
(1MK)

b)Write the formula of

i) Ion of L (1mk)

ii) Compound formed between K and P. (1mk)

2. The PH values of solutions A, B, C, D are given in the table below

Solution	PH
A	9.8
B	2.0
C	5.2
D	12.0

Which solution is identified as.
i) Strong acid. (1mk)

ii) Weak base (1mk)

iii) Lemon juice. (1mk)

3. In an experiment two similar boiling tubes were filled with carbon (IV) oxide. One of the boiling tubes was inverted over a trough of water and the other over a trough containing sodium Hydroxide solution. Draw two diagrams to show the result obtained after 10 minutes. (2mks)



ii) State one property of carbon (IV) oxide that makes it suitable as a fire extinguisher. (1mk)

4a) Explain why the volume of a gas decreases when its temperature is decreased at constant pressure.
(1mk)

b) A sample of oxygen gas occupies a volume of $2.0cm^3$ at pressure of 700K pa. What will be the pressure if the same sample occupies a volume of $150cm^3$. Assume temperature remains constant.
(2mks)

5. Describe how a solid sample of lead (II) chloride can be prepared using the following reagents. Dilute nitric acid, dilute Hydrochloric acid and lead (II) carbonate. (3mks)

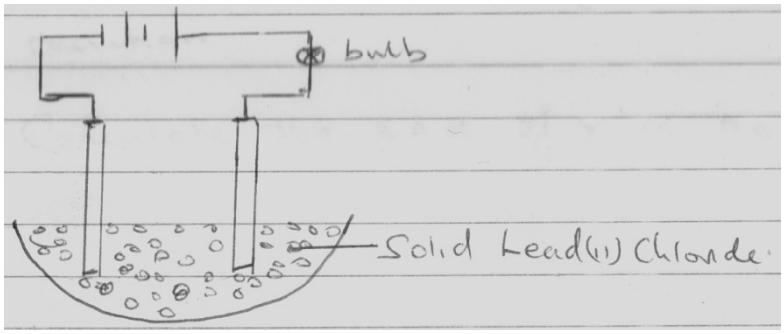
6. A certain element A whose atomic number is 14 has three isotopes. The table below shows the mass number and relative abundance of each isotopes.

Isotopic mass	% abundance
28.0	92.2
29.0	4.7
30.0	3.1

Calculate the relative atomic mass of element A.
(3mks)

7. Some potassium chloride was found to be contaminated with copper (II) oxide. Describe how a sample of potassium chloride can be obtained from the mixture.
(3mks)

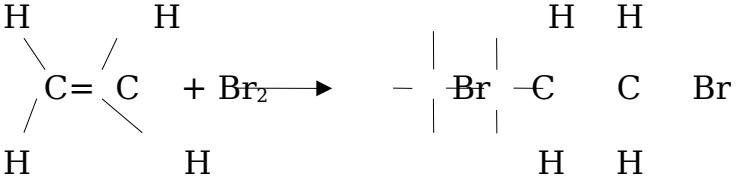
8. The following diagram shows the effect of electric current on lead (II) Chloride.



a) When the circuit was completed no current flowed. Explain why.
(1mk)

b) When lead (II) Chloride was heated to about 300^0C it melted and there was light on the bulb. State and explain the observation made at the anode.
(2mks)

9. The equation below is for the reaction between ethane and bromine.



a) State with reason whether reaction is addition or substitution.
(2mks)

b) Name the product formed.
(1mk)

10. 3.2 g of XOH reacts completely with $20cm^3$ of 2m dilute sulphuric (VI) acid.

a) Write down chemical equation for the reaction.
(1mk)

b) Calculate the RAM of X in the formula XOH.
(2mks)

11. Oxygen is obtained by fractional distillation of liquid air
a) Name two other gases obtained during the process.
(2mks)

b) Give two commercial use of oxygen . (1mk)
12. Explain how sodium chloride used in the solvay process can be obtained from sea water. (3mks)

13. A compound of carbon, hydrogen and oxygen contains 40% carbon, 6.67% hydrogen and the rest oxygen. Find its empirical formula. If its relative molecular mass is 180. Find its molecular formula.
(3mks)

14. Explain why there is a general increases in the first ionization energies of the element in period 3 of periodic table from left to right.
(2mks)

15a) What is a dative covalent bond.
(1mk)

b) Use dots (•) and crosses (X) show how an ammonium ion is formed. From ammonia and a Hydrogen ion.
(2mks)

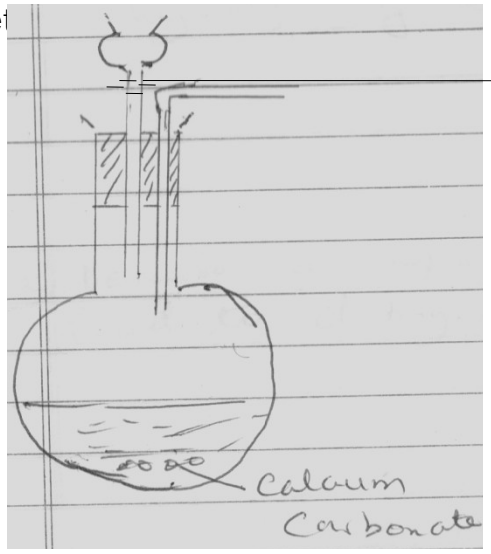
16. Explain why a mixture of copper (II) oxide and magnesium reacts when heated while there is no reaction when a mixture of copper and Magnesium oxide is heated. (2 mks)

17a) What is the chemical name of rust. (1mk)

b) How does paint stop rusting. (1mk)

c) The cars in Mombasa rusts faster than those in Nairobi. Explain.
(1mk)

18. The set up below is used to prepare and collect dry carbon (Iv) oxide gas.
Comple



19. State Gay Lusaacs law. (1mk)

b) What volume of oxygen will be required for complete combustion of 100cm^3 of carbon (II) oxide. What is the volume of the product formed (All volumes at same temperature and pressure) (2mks)

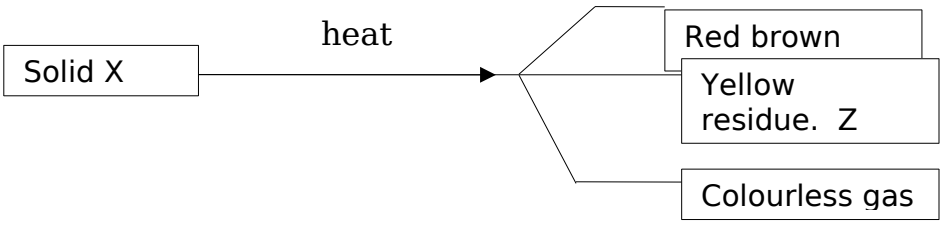
20. State and explain the observation made when Hydrogen gas is passed over heated copper (II) oxide.
(3mks)

21. Molecular chlorides undergo hydrolysis.
a) What is meant by hydrolysis. (1mk)

b) Write down a chemical equation for the hydrolysis of silicon (iv) Chloride.
(1mk)

22. Describe simple chemical test that can be used to distinguish between C_3H_6 and C_3H_8 (2MKS)

23.



a) Name

i) solid X .

ii) The red brown gas.

iii) Name ions present in the residue Z. (3mks)

24. A few drops of silver nitrate were added to sodium chloride solution in a test tube

a) What observation was made. (1mk)

b) Write a balanced chemical equation for the reaction. (1mk)

c) Write an ionic equation for the reaction. (1mk)

25. Magnesium carbonate decomposes when heated according to the equation.

$MgCO_{3(s)} \longrightarrow MgO_{(s)} + CO_{2(g)}$

Calculate the volume of carbon (iv) oxide which is produced when 8.4g of the carbonate is decomposed (Mg= 24.0 C= 12.0 o = 16.0) (Molar gas volume at s.t.p = 22.4 dm^3) (3mks)

26. The products formed by the action of heat on nitrates P, Q, and R are as shown in the table below

Nitrate of metal	Products formed
P	Metal oxide, Nitrogen (IV) oxide and oxygen gas
Q	Metal , nitrogen (iv) oxide and oxygen
R	Metal nitrite and oxygen gas

a) Arrange the metals in order of decreasing reactivity. (1mk)

b) Name a metal that could possibly be R.

(1mk)

C) Select a metal that would not displace hydrogen from dilute hydrochloric acid. (1mk)

27. Ethanol CH_3CH_2OH and dimethylether $CH_3\ OCH_3$ are two compounds with same molecular mass. Explain why ethanol has a higher boiling point (78.2^0C) than dimethylether (-24^0c) (3mks)

28. The electron arrangement of element X is 2;8:8:2.

i) In which group and period of periodic table is element X. (1mk)

ii) State what would be observed if element X was placed in warm water. (1mk)

iii) If methyl orange was added to the resulting solution what would be observed Explain. (1mk)

==========THE END==========

Student comment.....

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Seen by.....