

NAME.....INDEX
NO:.....
SCHOOL.....SIGNATURE.....DATE.....
.....

233/1

CHEMISTRY

PAPER ONE

JULY/AUGUST

2HOURS

KISUMU EAST AND NORTH DISTRICT JOINT EVALUATION TEST

Kenya Certificate of Secondary Education (k.c.s.e) 2012

CHEMISTRY

THEORY

PAPER ONE

JULY/AUGUST

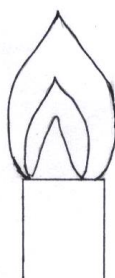
INSTRUCTIONS TO CANDIDATES

- ❖ Write your name and index in the **spaces** provided.
- ❖ Sign and write the date the examination is done.
- ❖ Answer **all** the questions in the spaces provided.
- ❖ Mathematical tables and **electronic calculators** may be used.
- ❖ ALL workings **MUST** be clearly shown where necessary.

For Examiner's Use Only

Question	Maximum score	Candidates score
1-28	80	

1. Below is a Bunsen burner flame.



a) Describe how this type of flame is produced. (1mk)

.....
.....
.....
.....
.....

b) Label on the diagram the least hot part of the flame. (1mk)

c) Name the gas produced by a burning candle that is a non –pollutant. (1mk)

.....
.....
.....

2. The element X can be represented as ${}_{17}^{35}X$

a) How many neutrons are contained in X? (1mk)

.....
.....

b) Use the data in the table below to calculate the relative atomic mass of X from the masses and percentage abundance. (2mks)

Mass	Percentage abundance
35	90
36	4
37	6

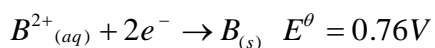
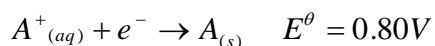
3. a) Write a chemical equation for the reaction that occur when Carbon (iv) oxide gas is bubbled in calcium hydroxide solution. (1mk)

.....
.....

b) Give a reason why Potassium hydroxide solution is not used to identify carbon (IV) oxide in the laboratory. (2mks)

.....
.....
.....
.....
.....

4. Below are standard electrode potentials for two half cells.



i) Write the cell represented when the two half cells are combined to give an electrochemical cell. (1mk)

.....
.....
.....
.....

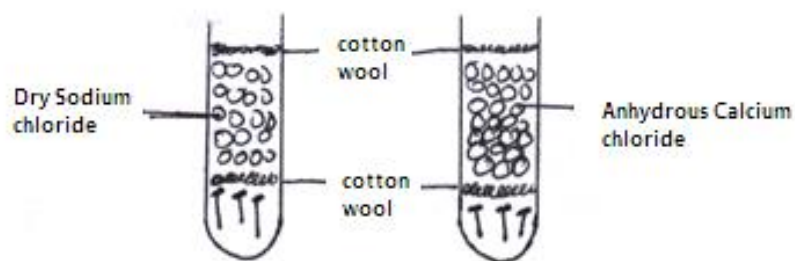
ii) Write the cell equation for the reaction that occur when the two half cells are combined. (1mk)

.....
.....
.....
.....

iii) Calculate the e.m.f of the electrochemical cell formed from A and B. (1mk)

.....
.....
.....
.....
.....

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



a) State and explain the observations made after two weeks. (2mks)

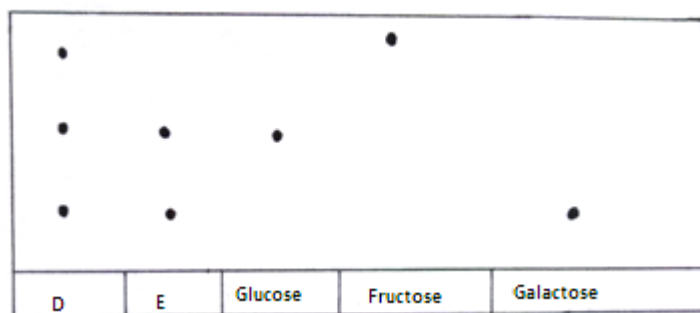
.....

b) Give *one* reason for Silver plating an Iron spoon. (1mk)

.....

6. In a neutralization reaction, Sodium carbonate solution was dissolved in water and the solution made to 250cm³. 25cm³ of this solution neutralized 20cm³ of 0.25Mnitric acid. Calculate the mass of Sodium carbonate that was dissolved in water. (3mks)

7. A chromatogram of enzymes A and E and three simple sugars are shown below.



Which two simple sugars are present in D and E. (2mks)

.....

.....
.....

8. When a piece of burning magnesium is lowered into a gas jar of sulphur (iv) oxide it continues to burn for sometime.

a) State and explain the observations made. (3mks)

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

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

.....
.....
.....

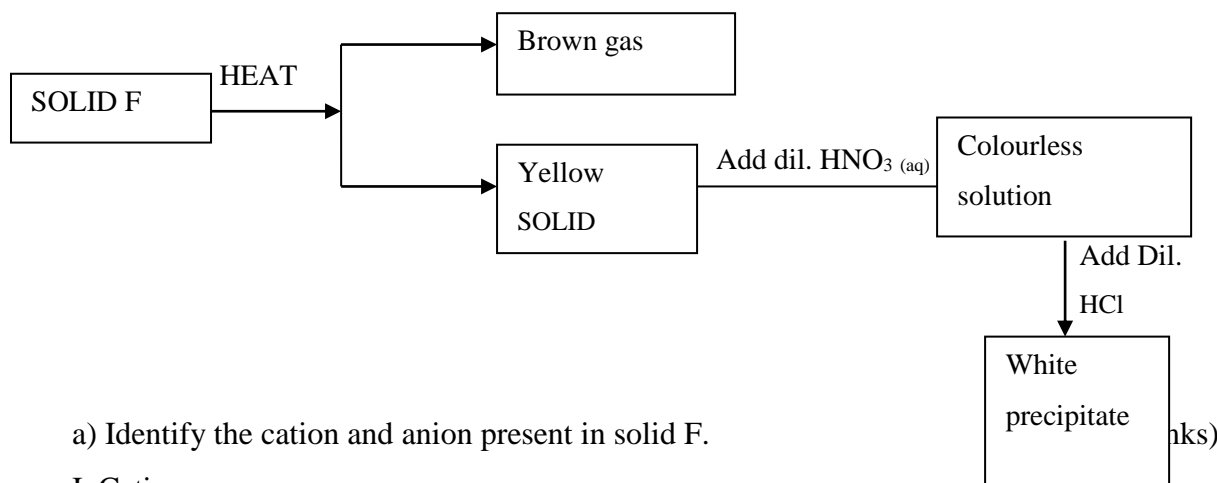
9. a) A hydrocarbon consists of 92.3% carbon. It's molecular mass is 26. Calculate it's molecular formula. (2mks)

.....
.....
.....
.....
.....
.....
.....

b) Draw the structure of the hydrocarbon. (1mk)

.....
.....
.....

10. Study the flow chart below and answer the questions that follow:



a) Identify the cation and anion present in solid F.

I. Cation

.....

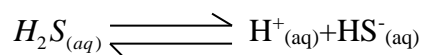
II. Anion

.....

b) Write ionic equation for the formation of the white precipitate. (1mk)

.....

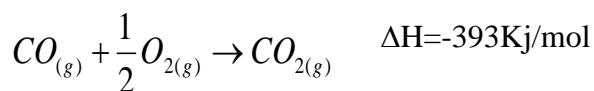
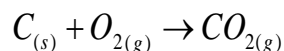
11. Hydrogen sulphide gas is slightly soluble in water. The reaction is given by equation below.



State and explain the effect of addition of Potassium hydroxide pellets on the concentration of hydrogen sulphide. (3mks)

.....

12. a) Calculate the enthalpy of formation of Carbon (ii) oxide from the data below. (3mks)



.....
.....
.....
.....
.....

b) *State one* disadvantage of using Carbon (II) oxide as a fuel. (1mk)

.....
.....
.....
.....

13. a) Explain why melting point of chlorine gas is greater than that of Argon. (1mk)

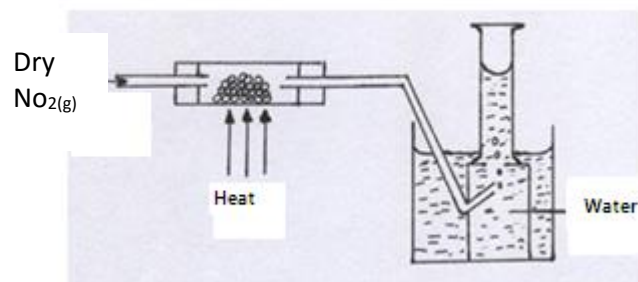
.....
.....
.....
.....

b) Using dot(●) and cross (x) to represent electrons draw a diagram to show bonding in carbon (iv) oxide. (1mk)

c) In terms of structure explain why Graphite is used as a lubricant. (1mk)

.....
.....
.....
.....

14. The diagram below show what's produced when Nitrogen (iv) oxide gas is passed over heated Zinc granules.



i) Identify gas H. (1mk)

.....

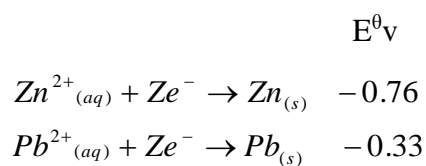
ii) Write an equation for the reaction that produces gas H. (1mk)

.....

iii) Using oxidation numbers, explain why the production of gas H is a reduction process. (1mk)

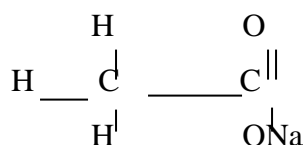
.....

15. Given



Draw an electrochemical cell indicating the direction of electron flow. (3mks)

16. An organic compound J reacts with Sodium hydroxide to form another with the formula:



a) Name the compound J. (1mk)

.....
.....

b) Write an equation to show how reaction occurs. (1mk)

.....
.....
.....

c) Give one use of compound J. (1mk)

.....
.....

17. At 40°C, 25cm³ of aqueous Potassium nitrate has a concentration of 0.22 moles. Calculate the solubility of the Potassium nitrate. (K=39,N=14,O=16) (3mks)

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

18. Starting with distilled water and solid Lead (II) nitrate; describe how a sample of Lead (II) carbonate can be prepared. (3mks)

.....
.....

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

19. On the grid provided, sketch curves of volume of Hydrogen gas produced against time when Magnesium ribbon reacts with 1M, 1.5M and 2M hydrochloric acid. (3mks)



20. In the manufacture of Sodium by electrolysis, why is Calcium chloride added to the molten electrolyte? (1mk)

.....
.....
.....
.....

21. When a piece of Magnesium ribbon is placed
a) in 1M Hydrochloric acid, bubbles of a colourless gas re produced more vigorously than in 1M Ethanoic acid. Explain (2mks)

.....
.....
.....

.....
.....

b) Write ionic equation for the reaction between magnesium and 1M hydrochloric acid. (1mk)

.....
.....
.....

22. a) Differentiate using equations, the bleaching action of Sulphur (IV) oxide and chlorine gas. (2mks)

.....
.....
.....

b) Apart from bleaching, state the use of Sulphur (IV) oxide. (1mk)

.....
.....

23. Study the table below.

Element	Atomic Radius (nm)	Ionic radius(nm)
W	0.133	0.095
X	0.121	0.185
Y	0.117	0.088
Z	0.113	0.146

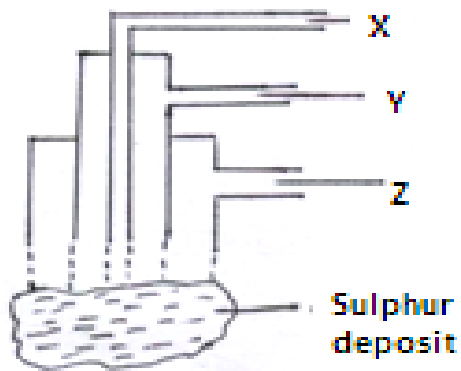
a) Identify the most reactive non-metal. Explain. (2mks)

.....
.....
.....
.....
.....

b) Name the type of bond in a compound formed between W and Z. (1mk)

.....
.....
.....

24. Study the diagram showing extraction of Sulphur from underground deposit.



a) i) State the role of substance X. (1mk)

.....
.....
.....

ii) Name substances Y and Z.

.....
.....
.....

b) Give one use of sulphur. (1mk)

.....
.....
.....

25. When 0.8g of Ammonium nitrate was dissolved in 100cm³ of water, the temperature changed from 24⁰C to 22⁰C. Calculate the molar enthalpy of dissolution. (3mks)

N=14,H=1,O=16; specific heat capacity of water is 4.2Jg⁻¹K⁻¹; density of water is 1gcm⁻³.

.....
.....
.....
.....
.....
.....
.....

.....
.....
26. When a few drops of aqueous ammonia is added to solution A, a white precipitate is formed. The white precipitate dissolves when excess ammonia solution is added.

a) Identify the cation present in solution A. (1mk)

.....
.....
.....

b) Write ionic equation for the production of the white precipitate.

.....
.....
.....

c) Give the formula of the complex ion formed when excess ammonia solution is added to solution A. (1mk)

.....
.....
.....
.....
.....
.....

27. a) What is observed when a few drops of phenolphthalein indicator is added to a solution whose pH value is 3.0? (1mk)

.....
.....
.....

b) Write an equation for the reaction between:

i) Lead (ii) oxide and dilute Nitric acid. (1mk)

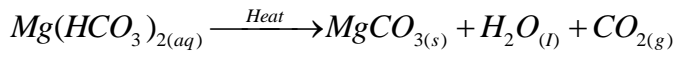
.....
.....

.....
.....

ii) Lead (ii) oxide and Sodium hydroxide solution. (1mk)

.....
.....
.....
.....
.....
.....

28. a) Study the equation below and use it to determine the type of water hardness being removed. (1mk)



.....
.....
.....
.....

b) *State one* disadvantage of water hardness. (1mk)

.....
.....
.....
.....