
KENYA NATIONAL EXAMINATION COUNCIL
REVISION MOCK EXAMS 2016
TOP NATIONAL SCHOOLS

ALLIANCE BOYS HIGH SCHOOL

233/1

CHEMISTRY

PAPER 1

TIME: 2 HOURS

SCHOOLS NET KENYA

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CHEMISTRY
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**ALLIANCE BOYS HIGH SCHOOL KCSE TRIAL
AND PRACTICE EXAM 2016**

INSTRUCTIONS TO CANDIDATES:

- Write your name and Index number in the space provided above.
- Answer **all** the questions in the spaces provided.
- All working **must** be clearly shown where necessary.
- Mathematical tables and electronic calculators can be used.

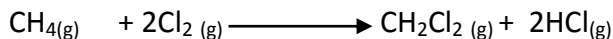
Question	Maximum score	Candidate's score
1		
2		
3		
4		
5		
6		
Total	80	

1. Hydrogen gas is one of the lightest gas known but has not lived to its expectation to be used in Observation balloons. Explain (2mks)

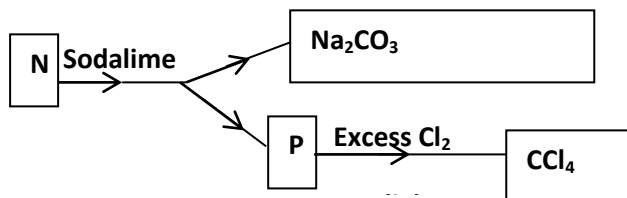
C – Cl	326
H – Cl	431

Calculate the enthalpy change of the reaction.

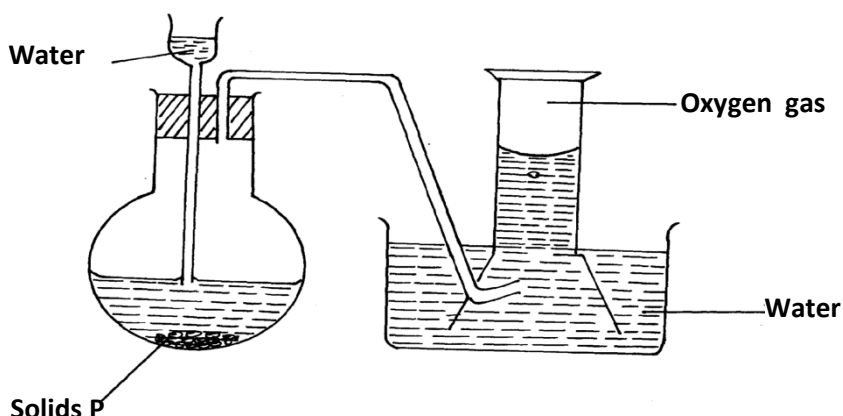
(3mks)



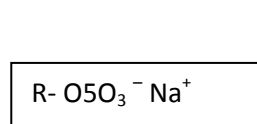
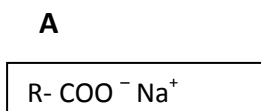
11. During the electrolysis of dilute sulphuric (VI) acid the volume of hydrogen gas collected is twice the volume of oxygen gas. Using half equations justify the above statement. (2mks)
12. Study the flow chart below and answer the questions that follow.



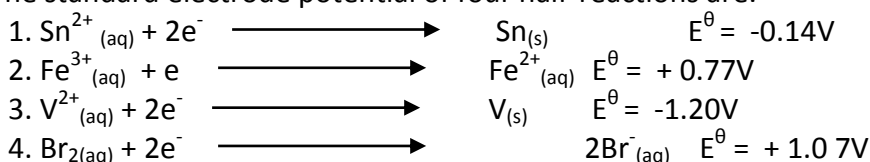
- a) Identify **N** and **P** (2mks)
- b) What name is given to the type of halogenation/Chlorination reaction in step 2 (1mk)
13. **M** grammes of a radioactive isotope decayed to 5grammes in 100days. The half-life of the isotope is 25 days.
- a) What is meant by half-life? (1mk)
- b) Calculate the initial mass of **M** of the radioactive isotope. (2mks)
14. The diagram below represents set-up that can be used to prepare and collect oxygen gas



- a) Name solid **P** (1mk)
- b) What property of oxygen makes it possible for its collection as indicated by the diagram. (1mk)
- c) Explain why it is important not to collect any gas for the first few seconds of the experiment. (1mk)
15. The compound **A** and **B** below are cleansing agents- Use it to answer the questions that follows.



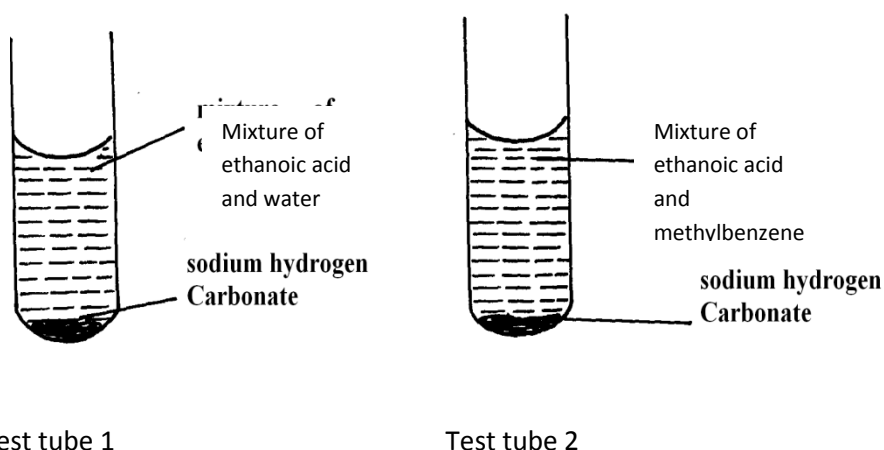
- (i) Identify cleaning agents **A** and **B** (1mk)
- (ii) State **two** disadvantages of cleansing agent **B** over **A**. (2mks)
16. The standard electrode potential of four half-reactions are.



- (i) Identify the strongest reducing agent. (1mk)
- (ii) Calculate the electrode potential for the electrochemical cell constructed from half cell 3 and 4 (2mks)
17. (i) Draw the structural formula of organic compound with the formula $C_5H_{10}O_2$ giving its name. (2mks)
- (ii) To which homologous series does the compound drawn above belong. (1mk)
18. 36cm^3 of a solution of potassium hydroxide requires 25cm^3 of 0.5M sulphuric acid to neutralize it.

Calculate the concentration of alkali in g/dm^3 (3mks)

19. In an experiment, a student put equal volumes of mixture of ethanoic acid and in water and ethanoic acid in methallybenzene in two test-tubes as shown below. In each test tube equal amounts of solid hydrogen carbonate were added.

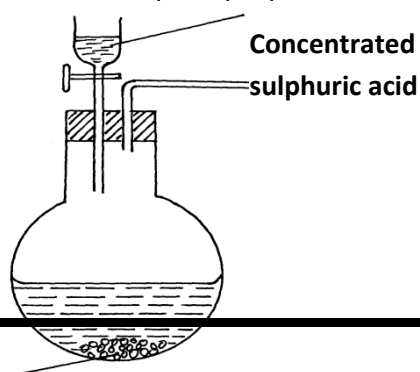


- a) State the observation which was made in each test-tube. (1mk)
- b) Explain the observation in (a) above. (2mks)
20. The following table gives the melting points of oxides of elements in period 3. Study it and answer the questions that follow:-

Formula of oxide	Na_2O	MgO	Al_2O_3	SiO_2	P_4O_{10}	SO_3
Melting point ($^\circ\text{C}$)	1190	3080	2050	1730	560	-73

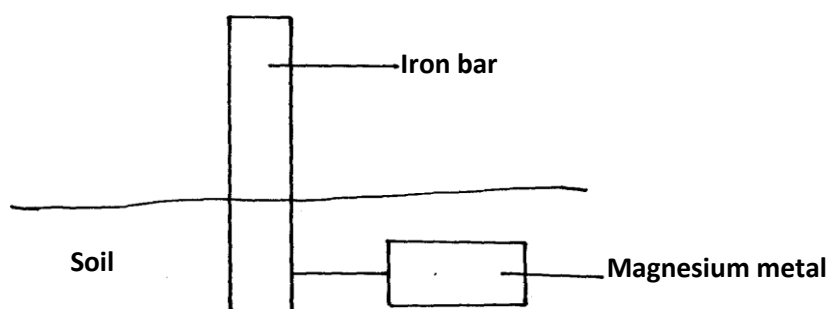
- (i) Explain the difference in melting points of MgO and P_4O_{10} (2mks)
- (ii) Name the compound in the above table that will dissolve both in dilute hydrochloride acid and dilute sodium hydroxide. (1mk)

21. The diagram below shows a set-up for preparation of hydrogen chloride gas.



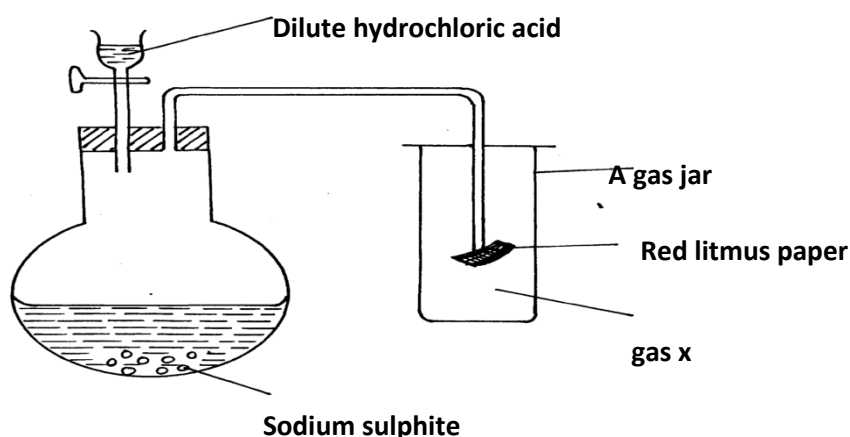
Sodium Chloride

- a) Complete the set-up to show how a dry sample of hydrogen chloride can be collected. (2mks)
- b) Write the equation for the reaction that produces hydrogen chloride gas. Q (1mk)
22. Describe how you would prepare crystals of sodium nitrate starting with 200cm³ of 2M sodium hydroxide. (3mks)
23. The diagram below shows an iron bar, which supports a bridge. The iron bar is connected to a piece of magnesium metal.

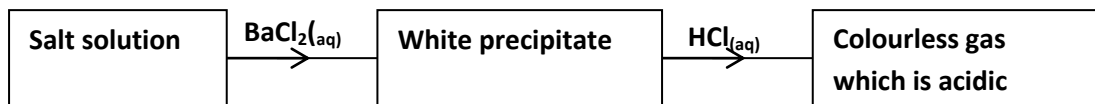


Explain why it is necessary to connect the piece of magnesium metal to the Iron bar. (2mks)

24. Study the set-up below and answer the questions that follow

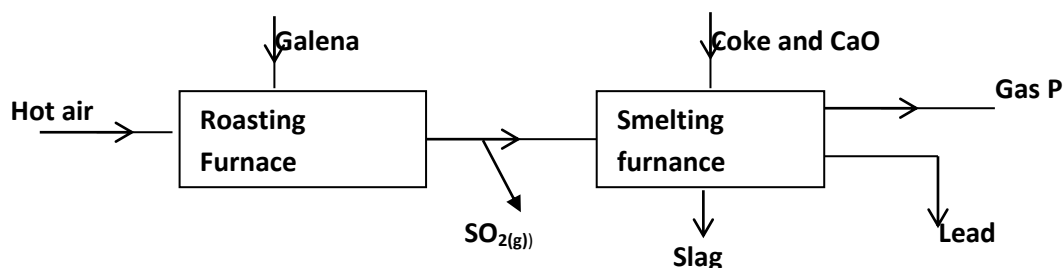


- a) Identify gas X (1mk)
- b) Write an equation for the reaction that produces gas x. (1mk)
- c) What is the effect of the gas x above on the red-litmus paper (1mk)
25. a) What do you understand by the term molar enthalpy of displacement of an element? (1mk)
- b) During a displacement reaction, excess iron powder was added to 25cm³ of 0.5M copper(II) sulphate solution. The temperature rose from 18.5°C to 33.0°C. Calculate the molar enthalpy of displacement of copper in copper (II) sulphate solution (specific heat capacity is 4.2 Jg⁻¹K⁻¹, Density of the solution = 1.0g/cm³) (2mks)
26. Study the scheme below and use it to answer the questions that follows.



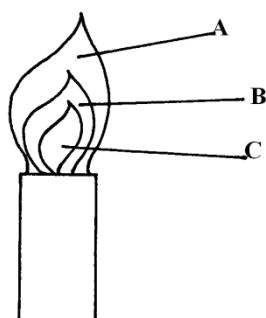
Write down the formulae of two possible anions present in salt solution P. (2mks)

27. During the extraction of lead from its ores one of the main ore used is Galena



- (i) Write an equation for the reaction in roasting furnace. (1mk)
- (ii) Name gas (1mk)
- (iii) State **one** use of lead metal. (1mk)

28 The diagram below shows a Bunsen burner when in use



Which of the labeled parts is used for heating? Give a reason (2mks)

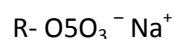
29. The table below shows solubilities of two salts M and N at different temperatures. Study it and answer the questions that follow.

Temperature (°C)	30	90
Solubility of M in g/100g of H ₂ O	25.0	64.0
Solubility of N in g/100g of H ₂ O	32.5	48.0

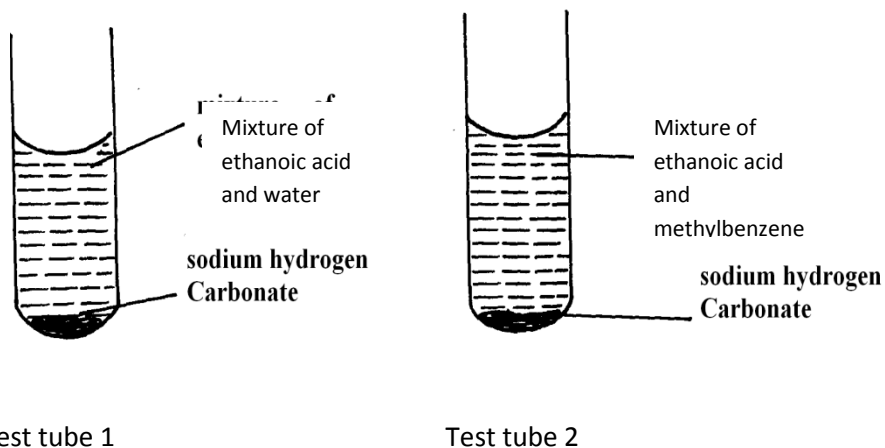
A mixture of 55g of salt M in 100g of water and 30g of salt N in 100g of water were cooled from 90°C to 30°C. Calculate the mass of salt that crystallize out. (2mks)

- a) Name solid P (1mk)
- b) What property of oxygen makes it possible for its collection as indicated by the diagram. (1mk)
- c) Explain why it is important not to collect any gas for the first few seconds of the experiment. (1mk)

15. The compound A and B below are cleansing agents- Use it to answer the questions that follows.

A**B**

- (i) Identify cleaning agents **A** and **B** (1mk)
- (ii) State **two** disadvantages of cleansing agent **B** over **A**. (2mks)
16. The standard electrode potential of four half-reactions are.
- $\text{Sn}^{2+}_{(\text{aq})} + 2\text{e}^- \longrightarrow \text{Sn}_{(\text{s})} \quad E^\theta = -0.14\text{V}$
 - $\text{Fe}^{3+}_{(\text{aq})} + \text{e}^- \longrightarrow \text{Fe}^{2+}_{(\text{aq})} \quad E^\theta = +0.77\text{V}$
 - $\text{V}^{2+}_{(\text{aq})} + 2\text{e}^- \longrightarrow \text{V}_{(\text{s})} \quad E^\theta = -1.20\text{V}$
 - $\text{Br}_{2(\text{aq})} + 2\text{e}^- \longrightarrow 2\text{Br}^-_{(\text{aq})} \quad E^\theta = +1.07\text{V}$
- (i) Identify the strongest reducing agent. (1mk)
- (ii) Calculate the electrode potential for the electrochemical cell constructed from half cell 3 and 4 (2mks)
17. (i) Draw the structural formula of organic compound with the formula $\text{C}_5\text{H}_{10}\text{O}_2$ giving its name. (2mks)
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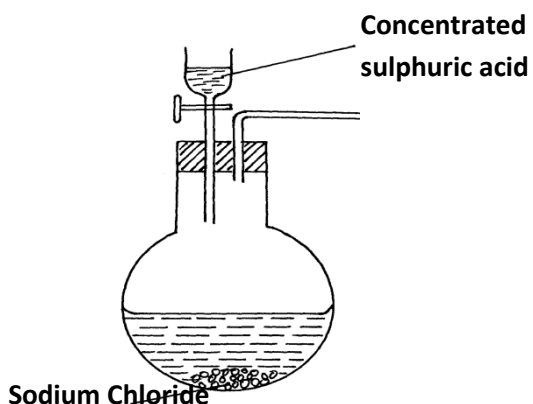


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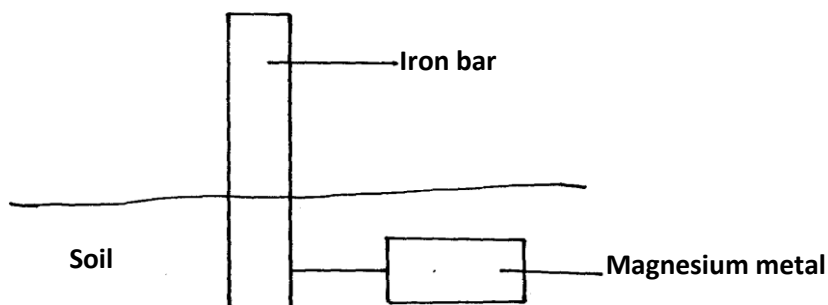
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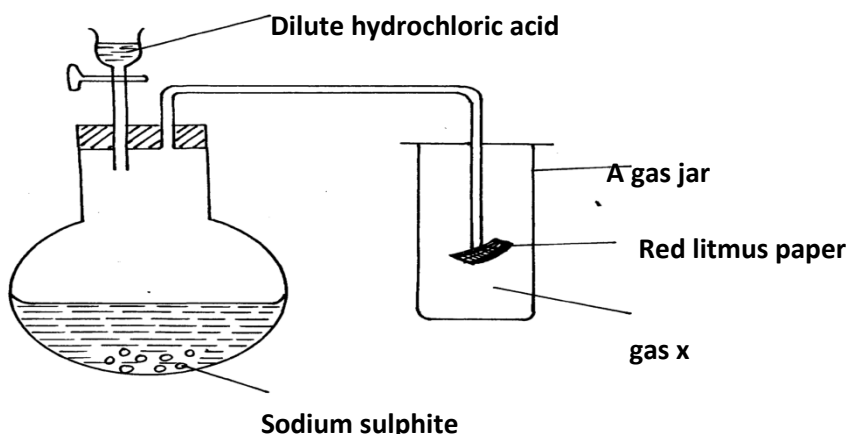


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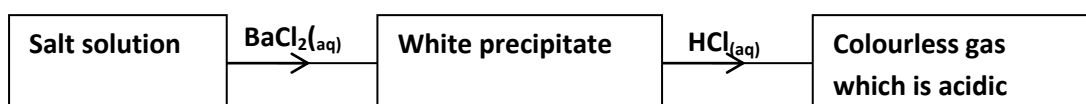


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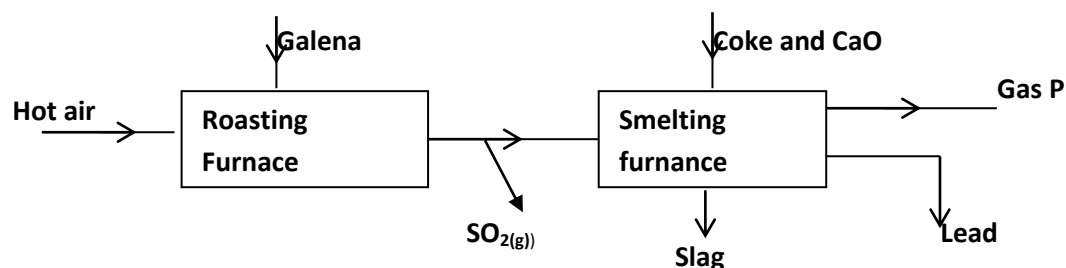
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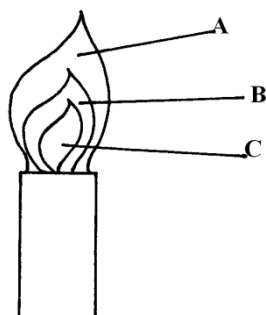
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