

Name Adm. No.

233

CHEMISTRY

Oct/Nov. 2015

Time: 2 Hours

Signature

Date

**KANDARA SUB-COUNTY SECONDARY SCHOOLS
FORM 1 JOINT EXAMINATION
Kenya Certificate of Secondary Education**

CHEMISTRY

Oct/Nov. 2015

Time: 2 Hours

INSTRUCTIONS TO CANDIDATES

- * Write your name and admission number in the spaces provided.
- * Sign and write the date of examination on the spaces provided.
- * Answer **all** the questions in the spaces provided.
- * All working must be clearly shown where necessary.
- * Check the question paper to ascertain that all the pages are printed and no questions are missing.

For Examiner's Use Only

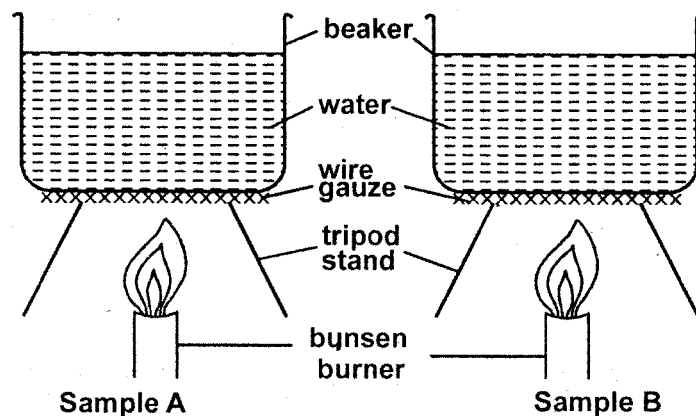
Questions	Maximum score	Candidate's score
1 - 17	100	

1. What is the first aid done in case of an acid burn in the laboratory ? (1 mark)

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2. The set up below was used by a student to boil water in the laboratory. Study it and answer the questions that follow.



- a) Which water sample boiled first ? (1 mark)

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- b) What was observed on the bottom of each beaker after sometime ? (2 marks)

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- c) Explain the observations made in (a) and (b) above. (3 marks)

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3. Why are most laboratory apparatus made of glass ? (2 marks)

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4. Define the following terms : (1 mark)
- i) Drugs

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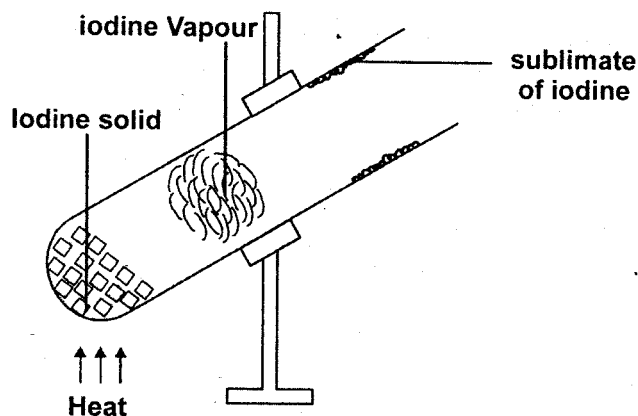
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- ii) Drug abuse (1 mark)

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



a) What is observed when iodine solid is heated ?

(2 marks)

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b) Name the process that iodine undergoes when heated.

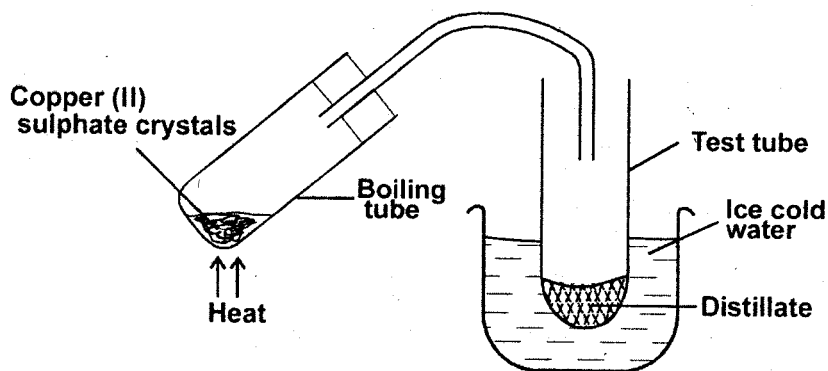
(1 mark)

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c) Give other two examples of substances that undergoes the same process in (b) above. (2 marks)

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



a) State the observation made in the boiling tube where heating is taking place.

(1 mark)

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b) Give the actual name of the distillate.

(1 mark)

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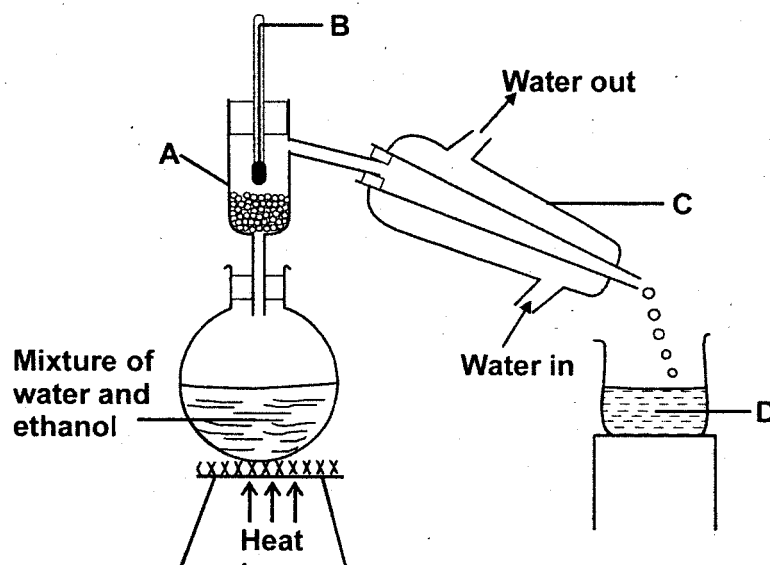
c) Write a word equation of the change taking place when copper (II) sulphate crystals are heated.

(1 mark)

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d) Name the type of change that occurs when copper (II) sulphate crystals are heated. (1 mark)

7. Study the diagram below and use it to answer the questions that follow.



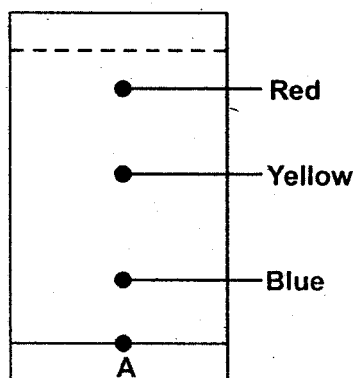
a) Name the parts labelled A, B, C and D on the diagram. (4 marks)

b) Name the method of separation of mixtures shown above. (1 mark)

c) Why is it possible to separate water and ethanol by the method shown above. (1 mark)

d) What is the use of apparatus A in the method above? (1 mark)

8. The chromatogram below shows the constituents of a flower extract A using an organic solvent. Study it and answer the questions that follow.



a) Name two possible organic solvents you can use for this experiment. (2 marks)

b) Name two properties of the red pigment that causes it to move the furthest distance. (2 marks)

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c) On the diagram, label the baseline and the solvent front. (2 marks)

d) State one industrial application of chromatography. (1 mark)

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9. Name the elements present in the following compounds.

a) Sodium chloride (1 mark)

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b) Zinc oxide (1 mark)

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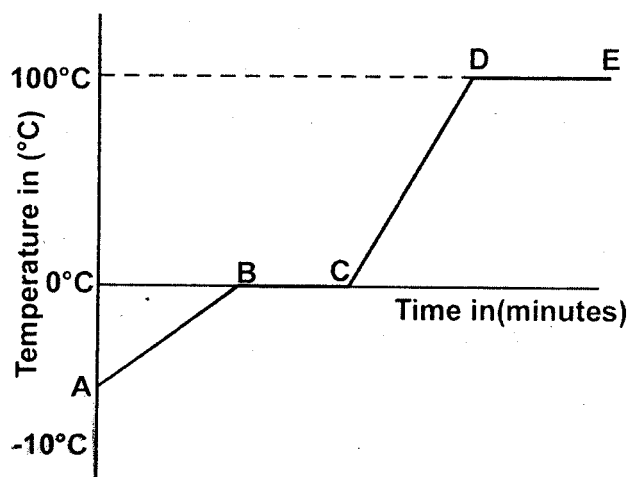
c) Magnesium sulphide (1 mark)

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d) Lead (II) nitrate (1 mark)

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10. The graph below was obtained by a student during an experiment which ice was heated. Study it and answer the questions that follow.



a) Determine the melting point and the boiling point of the ice. (1 mark)

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b) Explain why there was no change during the sections BC and DE respectively. (2 marks)

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c) Is the above ice pure or impure ? Explain.

(2 marks)

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11. Complete the table below by filling the empty grids.

(8 marks)

Name of element	Symbol of element
Hydrogen	H
	Na
Lithium	
Chlorine	Cl
Beryllium	
	P
Magnesium	
	Ne
Potassium	
	S

12. Complete the following chemical equations :

i) Sodium + chlorine $\rightarrow$ (1 mark)

ii) Carbon + oxygen $\rightarrow$ (1 mark)

iii) Potassium + sulphur $\rightarrow$ (1 mark)

13. a) What is an acid ?

(1 mark)

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b) What is a base ?

(1 mark)

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c) What is an acid-base indicator ?

(1 mark)

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d) i) Name any three commercial indicators used in the laboratory.

(3 marks)

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ii) Complete the following table by filling in the blank spaces.

(4 marks)

Indicator	Colour in acid	Colour in base
Phenolphthaleine		pink
Methyl orange	red	
Litmus		

e) Six solutions A, B, C, D, E and F were tested with a universal indicator and their PH values recorded as shown in the table below.

Solution	PH
A	11.0
B	2.0
C	6.0
D	7.0
E	12.0
F	13.0

Identify :

i) Weakest base (1 mark)

ii) Strongest base (1 mark)

iii) Weakest acid (1 mark)

iv) Neutral substance (1 mark)

f) A bee keeper found that when stung by a bee, application of a little solution of sodium hydrogen carbonate helps to relieve the irritation from the affected area. Explain. (2 marks)

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g) Complete the following word equations.

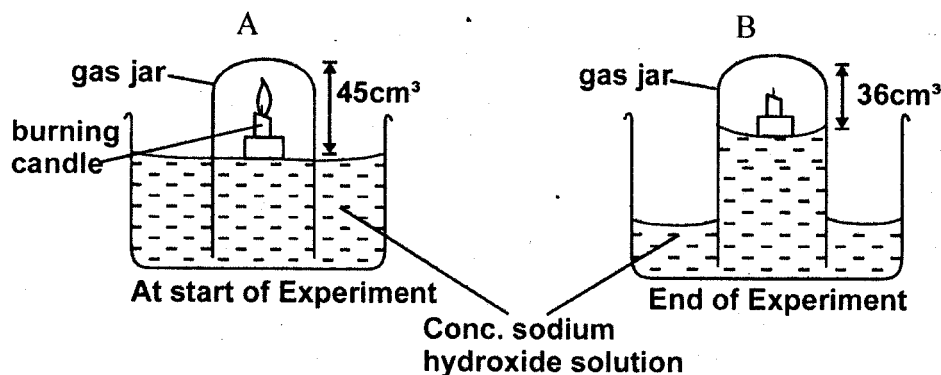
i) Sodium hydroxide + hydrochloric acid → (1 mark)

ii) Potassium hydrogen carbonate + sulphuric (VI) acid → (1 mark)

iii) Sodium carbonate + nitric (V) acid → (1 mark)

iv) Zinc + hydrochloric acid → (1 mark)

14. A Form 1 student set up the following apparatus to investigate the percentage of oxygen in air.



The volume of air in the gas jar was originally 45cm^3 and at the end of the experiment was 36cm^3 .

a) Determine the percentage of air that is used in combustion. (3 marks)

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b) The percentage of air used in combustion as calculated in (a) above is different from the theoretical value 20.9%. Explain. (2 marks)

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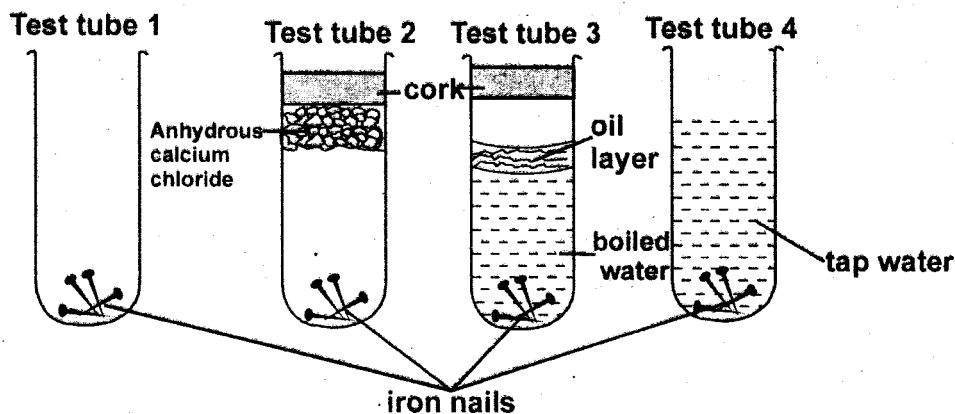
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c) Why is concentrated sodium hydroxide preferred to water in the above experiment? (1 mark)

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15. Study the following set ups used to investigate rusting. The set ups were left for three days and observations were made. The iron nails used were clean originally.



a) i) What was observed in each of the four test tubes after three days? (2 marks)

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ii) State two conditions necessary for rusting.

(2 marks)

iii) Why was water boiled and an oil layer put in test tube 3 ?

(1 mark)

iv) What is the purpose of anhydrous calcium chloride in test tube 2 ?

(1 mark)

b) Give the chemical name for rust.

(1 mark)

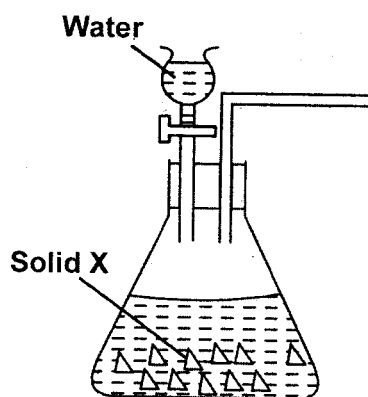
c) Vehicles made of iron rust faster in Mombasa county than vehicles of iron in Kandara sub-county. Explain.

(2 marks)

d) State any three methods used to prevent rusting.

(2 marks)

16. The set up below was used to prepare a sample of oxygen gas. Study it and answer the questions that follow.



a) Complete the diagram to show how oxygen is collected.

(2 marks)

b) Identify solid X.

(1 mark)

c) Write a word equation for the reaction between solid X and water.

(1 mark)

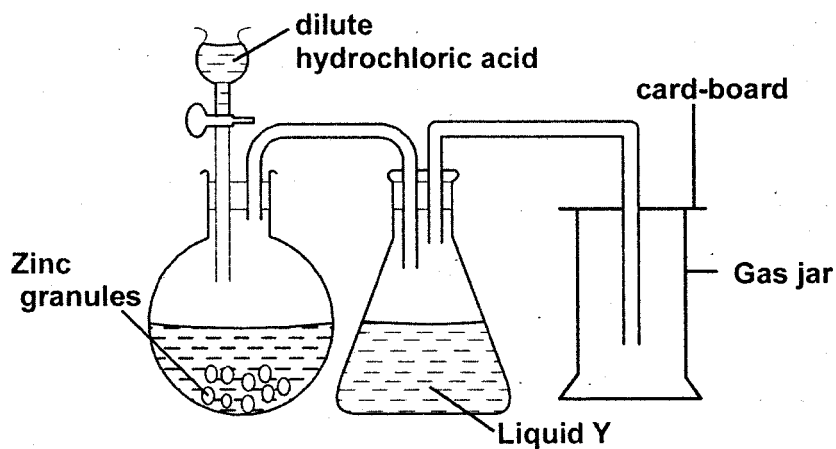
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d) State another substance that can be decomposed to form oxygen gas.

(1 mark)

.....

17. a) The set up below was used to prepare dry hydrogen gas. Study it and answer the questions that follow.



i) Is the method of collecting the gas correct ? Explain.

(2 marks)

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ii) What would be liquid Y ?

(1 mark)

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b) i) Write a word equation of reaction between hydrogen gas and lead (II) oxide.

(1 mark)

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ii) What is the test for hydrogen gas ?

(1 mark)

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KANDARA SUB-COUNTY SECONDARY SCHOOLS

FORM 1 JOINT EXAMINATION

CHEMISTRY Oct/Nov. 2015 MARKING SCHEME

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| <p>1. Wash with a lot of cold water on burnt part ✓1</p> <p>2. a) Sample B ✓1</p> <p style="padding-left: 20px;">b) - sample B is covered with soot ✓1
(or black solid)
- sample A has no soot ✓1</p> <p style="padding-left: 20px;">c) - sample B is heated using luminous flame that contains unburnt carbon which form black soot ✓1
- sample A is heated using non-luminous flame that do not contain soot ✓1
- water is sample A boil first because non-luminous flame is hotter than luminous flame ✓1</p> <p>3. - glass is transparent for visibility ✓1
- glass does not react with most chemicals ✓1</p> <p>4. i) Drugs are chemical substances that alter the normal functioning of the body when taken or introduced in the body ✓1
ii) Drug abuse is using the drugs for wrong purpose ✓1</p> <p>5. a) - dark shiny iodine solid turns to a purple vapour ✓1
- the purple vapour cools to form dark shiny solid iodine ✓1</p> <p style="padding-left: 20px;">b) Sublimation ✓1</p> <p style="padding-left: 20px;">c) - ammonium chloride ✓1
- iron (III) chloride ✓1
- benzoic acid
- aluminium chloride
- solid carbon (IV) oxide (dry ice)
<i>any two</i></p> <p>6. a) Blue crystals turn to a white powder ✓1</p> <p style="padding-left: 20px;">b) Water ✓1</p> | <p style="padding-left: 20px;">c) Hydrated copper (II) → anhydrous copper sulphate (II) sulphate + water ✓1</p> <p style="padding-left: 20px;">d) Temporary chemical change ✓1</p> <p>7. a) A - fractionating column ✓1
B - thermometer ✓1
C - Liebig's condenser ✓1
D - distillate ✓1</p> <p style="padding-left: 20px;">b) Fractional distillation ✓1</p> <p style="padding-left: 20px;">c) Water and ethanol have close but different boiling points ✓1</p> <p style="padding-left: 20px;">d) Apparatus A condenses vapour of a liquid before its boiling point ✓1</p> <p>8. a) - propanone / acetone ✓1 (any two)
- ethanol ✓1</p> <p style="padding-left: 20px;">b) - it is more soluble in the organic solvent ✓1
- it is less sticky / less absorbed in the paper ✓1</p> <p style="padding-left: 20px;">c) Mark on the diagram
- base line where mixture A is ✓1
- solvent front the dotted line ✓1</p> <p style="padding-left: 20px;">d) - separation of dyes ✓1
- analyze and identify mixtures
(any one)</p> <p>9. a) Sodium, chloride ✓1
b) Zinc, oxygen ✓1
c) Magnesium, sulphur ✓1
d) Lead, nitrogen, oxygen ✓1</p> <p>10. a) Melting point is 0°C ✓½
Boiling point is 100°C ✓½</p> |
|---|--|