

Candidate's Name _____ Index No _____ / _____

9518/3

CHEMISTRY SUBJECT METHODS

Paper 3

D.T.E.

March/April 2011

Time: 2 hours

Candidate's Signature _____

Date _____



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN TEACHER EDUCATION

CHEMISTRY SUBJECT METHODS

Paper 3

2 hours

INSTRUCTIONS TO CANDIDATES

Write your name and index number in the spaces provided above.

Sign and write the date of examination in the spaces provided above.

Answer ALL the questions in the spaces provided.

Electronic calculators may be used.

For Examiner's Use Only

Section	Question	Maximum Score	Candidate's Score
A	1	13	
	2	11	
	3	11	
B	4	11	
	5	10	
	6	12	
C	7	10	
	8	11	
	9	11	
Total Score		100	

This paper consists of 13 printed pages.

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

1. (a) (i) State **two** reasons why a lesson should have an introduction. (2 marks)

- (ii) Why should a lesson have a conclusion? (1 mark)

- (b) The teacher may give a class assignments by writing the task on the board while the students copy the assignment in their notebooks or by stating orally what is to be done. Give **two** advantages of the teacher writing the assignment on the board. (2 marks)

- (c) Write **four** skills that a learner acquires by performing an experiment individually. (4 marks)

- (d) Educational trips to industries are meant to enrich learner's experience of physical and chemical processes. What processes would be enriched by visiting the following places?

- (i) An industry where sodium chloride is produced. (1 mark)

- (ii) Changanwe Oil Refinery (1 mark)

(iii) A plant where hardening of vegetable liquid oils takes place. (1 mark)

(iv) A plant where terylene is manufactured. (1 mark)

2. (a) Explain why it is important to keep a record of work in a department. (2 marks)

(b) A sample of record of work format is shown below.

TERM _____				WEEK _____		
TEACHER'S NAME	CLASS	DATE	TOPIC	SUB-TOPIC	REMARKS	TEACHER'S SIGNATURE

HOD's Remarks

Signature _____ Date _____

Principal's Remarks

Signature _____ Date _____

What is the purpose of:

(i) remarks column? (1 mark)

(ii) signature column? (1 mark)

(iii) date column? (1 mark)

- (c) Why is it necessary for the head of department and the principal to read and counter-sign the record of work?

(i) Head of department

(2 marks)

(ii) Principal

(1 mark)

- (d) Give **three** reasons why a test lesson must be included in the scheme of work.

(3 marks)

3. (a) Study the lesson objectives below.

'By the end of the lesson, the learner should be able to:

- (i) illustrate acidity of aqueous solutions
- (ii) classify acids as strong or weak.

Using universal indicator and a pH Chart, describe a procedure a teacher can use to achieve the above objectives. (4 marks)

(b) Question / Answer (Q/A) is a technique of teaching. State **two** ways in which it facilitates.

(i) Teaching (2 marks)

(ii) Learning. (2 marks)

(c) State **three** qualities of a good teaching aid. (3 marks)

4. (a) State and explain the **two** systems used in arranging chemicals in a laboratory store. (4 marks)

(b) State **four** uses of a consumable stores ledger in a chemistry laboratory. (3 marks)

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- (c) Explain why unreacted sodium metal and phosphorus should not be thrown into the sinks. (2 marks)

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- (d) The stock packets of litmus paper were stored in a room together with poorly corked concentrated ammonia solution. State and explain the observation made after one week. (2 marks)

5. (a) What is meant by laboratory safety? (1 mark)

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- (b) During an experiment, absolute ethanol was used to extract flower dyes. A student drank 100 cm³ of absolute ethanol from a half-full 250 ml beaker. The student later became unconscious.

- (i) State **two** major failures by the teacher in charge which may have led to this incident. (2 marks)

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- (ii) How would one handle the unconscious student? (2 marks)

(c) Name **two** types of fires that may occur in a secondary school laboratory. (2 marks)

(d) State a suitable fire extinguisher for each type of fire named in (c) above. (2 marks)

(e) Explain why it is necessary to have a functioning water shower at a strategic position in a chemistry laboratory. (1 mark)

6. (a) What is a standard solution? (1 mark)

(b) A chemistry practical class requires 6 litres of 2M sulphuric (VI) acid (H_2SO_4). Given that the density of the stock solution of sulphuric (VI) is 1.84 g/cm^3 . ($\text{H} = 1$, $\text{S} = 32$, $\text{O} = 16$), calculate:

(i) the number of moles of sulphuric (VI) acid required to prepare 6 litres of 2 M sulphuric (VI) acid. (1 mark)

- (ii) the volume of stock solution required to prepare the 6 litres of 2M solution of sulphuric (VI) acid. (3 marks)

- (iii) Describe the procedure of how one would prepare 6 litres of 2M sulphuric (VI) acid. (2 marks)

- (c) Why is it necessary to keep the stock solution of sulphuric (VI) acid properly corked? (1 mark)

- (d) Explain why the reagent bottle containing lime water should be kept stoppered especially during class experiment. (2 mark)

- (e) In the absence of distilled water, rain water collected in a clean vessel can be filtered, warmed and then used to make solutions for laboratory use. State why:

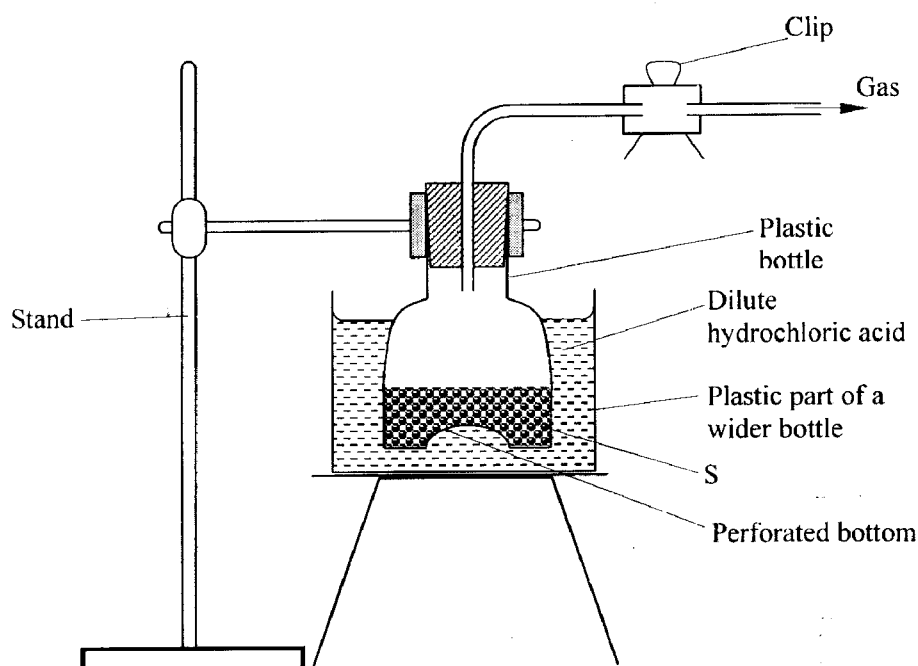
- (i) filtering is necessary. (1 mark)

- (ii) warming is required. (1 mark)

7. (a) What is improvisation in chemistry?

(1 mark)

(b) Study the diagram below and answer the questions that follow.



(i) Which gases can be prepared using this apparatus when solid S is?

I Iron (II) sulphide

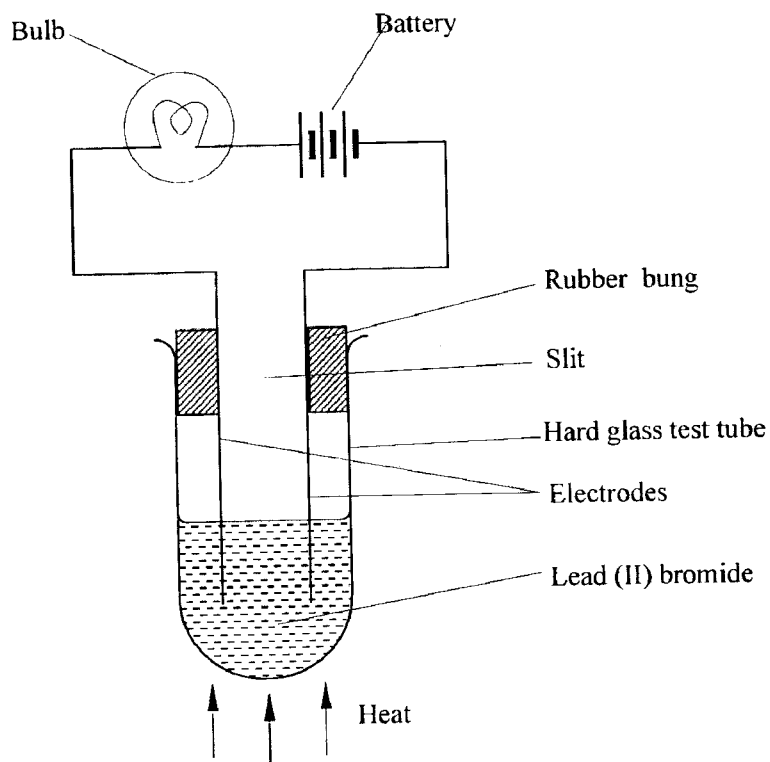
(1 mark)

II Calcium carbonate (marble chips).

(1 mark)

(ii) What is the name of the standard apparatus for performing such an experiment?
(1 mark)

- (c) The set up below was used in a demonstration experiment.



- (i) State a possible title for this experiment. (1 mark)

- (ii) State **two** observations that would be made if heating is stopped. (2 marks)

- (iii) Give the reason for using a rubber bung with a wide slit. (1 mark)

(iv) State:

I one risk associated with one of the products produced. (1 mark)

II explain how the risk named in (I) above can be avoided. (1 mark)

8. (a) Explain the meaning of the following verbs as used when constructing test items. (3 marks)

(i) Describe

(ii) Determine

(iii) Distinguish

- (b) (i) State **two** qualities of a good test item. (2 marks)

- (ii) The question below appeared on form 3 test:
Question: Which is the stronger reducing agent, sulphur (IV) oxide gas or hydrogen sulphide gas?

- I Give **two** reasons why this is not a good test item? (2 marks)

- II What is the objective of this question? (1 mark)

- (c) Give **three** reasons why directing a question to a particular learner in class may interfere with the effectiveness of learning. (3 marks)

9. (a) Draw and label a diagram showing how dry chlorine gas is prepared in a school laboratory. (5 marks)

- (b) During secondary school class experiments, it is advised that students work in small groups. State **two** advantages for working in groups. (2 marks)

- (c) The chemistry teacher should try the experiment before presenting it to the class. Give **two** reasons for this requirement. (2 marks)

- (d) Why is it necessary to let the students know they will be surcharged for any breakages or loss of any laboratory apparatus/equipment? (2 marks)
