

NAME: .....ADM.NO.....

SCHOOL.....DATE.....SIGN.....

CHEMISTRY

**FORM II**

(THEORY)

Time: 2 hours

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CHEMISTRY

**FORM II**

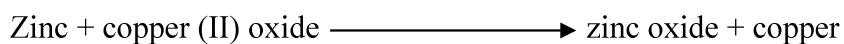
### **INSTRUCTIONS TO CANDIDATES**

*Write your name in spaces provided above*

*Answer **ALL** questions in the spaces provided.*

*All workings **must** be clearly shown where necessary.*

1. Study the word equation below and answer the questions that follow



- a) Which element has been oxidized? (1 mark)
- b) Which element has been reduced? (1 mark)
- c) State the oxidizing agent (1 mark)
- d) State the reducing agent (1 mark)
- e) What is oxidation? (1 mark)
- f) What is reduction? (1 mark)

1. State two chemical tests for the presence of water (2 marks)

2. The pH of a soil sample was found to be 6.5. An agricultural officer recommended the addition of lime (calcium oxide). State two functions of lime in the soil (2 marks)

3. State 3 advantages of using glass apparatus in the laboratory over plastic apparatus. 1mk

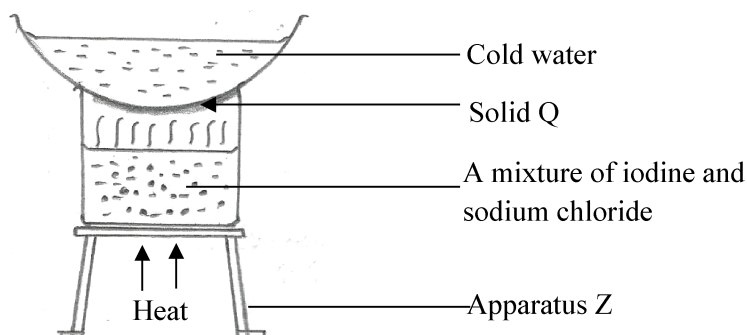
4. Explain how you would separate a mixture of sand, salt and water (3 marks)

5. Solutions F, W and Q have pH values shown in the table below

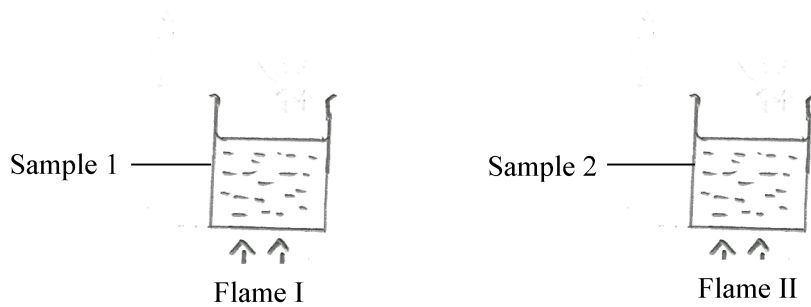
Solution	pH value
F	2.0
W	5.5
Q	8.0

- a) What do you deduce about the nature of solution W? (1 mark)
- b) Which solution would react vigorously with sodium hydroxide? (1 mark)
- c) Which solution is likely to be ammonia solution? (1 mark)

6. Students from Kamatu secondary school did an experiment in their laboratory on separation of mixtures. Study the set up below and answer the questions that follow.



- a) Name solid Q (1 mark)
- b) What is the name given to the above method of separating mixtures? (1 mark)
- c) What was the use of cold water? (1 mark)
- d) Why was it possible to separate the two mixtures? (1 mark)
- e) Identify apparatus Z (1 mark)
7. A student reacted hydrochloric acid with sodium carbonate, a salt was formed, water and a colourless gas which formed a white precipitate with calcium hydroxide.
- a) Give the name of the salt formed (1 mark)
- b) Identify the colourless gas produced (1 mark)
- c) Write a word equation for the reaction that took place (1 mark)
8. Two samples of water of equal volumes were heated on different flames of a Bunsen burner as shown in the diagram below. The sample in flame I took 8 minutes to boil while that in flame II took 20 minutes to boil.



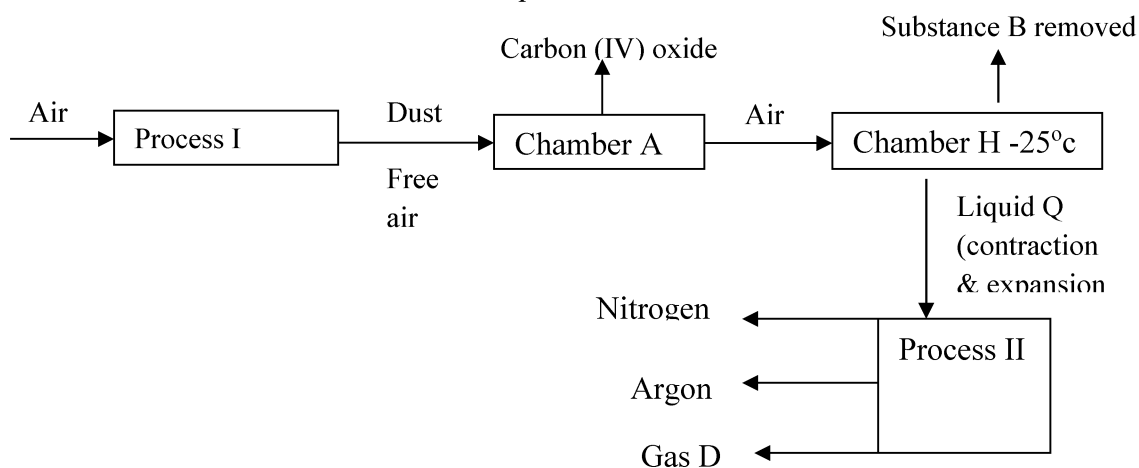
a) Identify – flame I , give a reason (2 marks)

- Flame II, give a reason (2 marks)

b) What other observation was made in this experiment when heating was over? Give a reason (2 marks)

9. In a class experiment a student separately heated equal volumes of distilled water and sea water on identical flames. Identify the water sample which boiled first. Give a reason for your answer. (2 marks)

10. Use the flow chart below to answer the questions that follow.



a) Identify the following substances (3 marks)

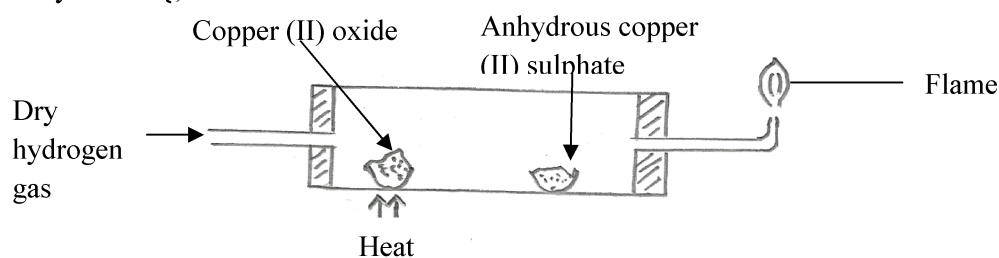
- i. Substance B
- ii. Liquid Q
- iii. Gas D

b) Name two substances that can be used in chamber A to remove carbon (IV) oxide (2 marks)

c) Name a substance that can be used in chamber H to remove substance B (1 mark)

- d) Identify the following processes (2 marks)
- Process I
  - Process II
- e) Give one other industrial process in which process II is used, (1 mark)
- f) Give the physical property of the components of the mixture separated by process II (1 mark)

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



- Why is it important to drive out all the air from the combustion tube before lighting the jet? (1 mark)
  - State the observations made in the combustion tube (2 marks)
  - What is the purpose of anhydrous copper (II) sulphate in this experiment (1 mark)
  - Which property of hydrogen is being investigated in the above experiment (1 mark)
12. Students from Bunyore girls high school in Kisumu county went for a symposium in Shimo La Tewa high school in Mombasa county. They realized that, their school buses were bought on the same term the previous year, the bus for Shimo La Tewa high school had rusted faster than their bus. Give a suitable explanation for this observation. (3 marks)

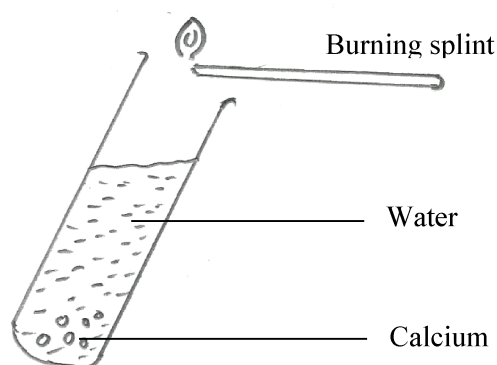
13. When a student was stung by a bee, the teacher applied a solution of aqueous ammonia to the affected area of the skin and the student was relieved off the pain. Explain (2 marks)

14. Given the following:
- leaves from tradescantia
  - Propanone
  - Mortar and pestle
  - Beaker

Describe how you can make a simple acid-base indicator

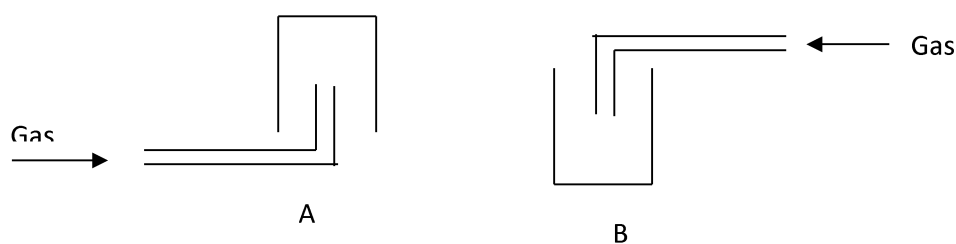
(4 marks)

15. The set up below was used in a chemistry lesson while studying the reaction of metals with water



- a) Write a word equation for the reaction taking place in the boiling tube (1 mark)
- b) State the observations made in this experiment (1 mark)
- c) Explain the observation you have stated in (b) above (1 mark)
- d) A solution of phenolphthalein indicator was added to the resulting solution. State and explain what was observed. (2 marks)
- e) Predict the pH value of the resulting solution. Explain (2 marks)

16. The diagrams below represent two methods of gas collection in the laboratory.



- a) Give their names A- (2 marks)  
B –
- b) State the property of gases collected by the above methods (2 marks)  
A-  
B –

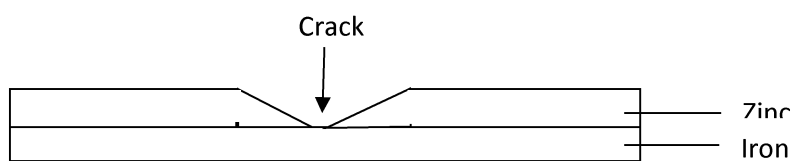
17. In an experiment to investigate the percentage of oxygen in air, 200 cm<sup>3</sup> of air was passed over the heated copper turning repeatedly until a constant volume of air remained. 160 cm<sup>3</sup> of air remained at the end of the experiment.

a) Determine the percentage volume of air used up during the experiment (3 marks)

b) Name two gases that remained in 160 cm<sup>3</sup> of air (2 marks)

18. List down 3 mineral acids that are commonly used in the laboratory. (3 marks)

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



a) What is the name given to the above method of preventing rusting? (1 mark)

b) When the set up is exposed to atmosphere the iron exposed in the crack does not rust. Explain (1 mark)