

Name: Class:

Adm.No.....

Date:

233/3

CHEMISTRY

Paper 3

END OF TERM TWO EXAM JULY 2019

Time: $1\frac{3}{4}$ hours

FORM THREE



SUNSHINE SCHOOL
Kenya Certificate to Secondary Education
CHEMISTRY PAPER 3

INSTRUCTIONS TO CANDIDATES

1. Write your name and admission number in the spaces provided above.
2. Sign and write the date of examination in the spaces provided above.
3. Answer all the questions in the spaces provided in the question paper
4. You are NOT allowed to start working with the apparatus for the first 5 minutes of the $1\frac{3}{4}$ hours allowed for this paper. This time is to enable you to read the question paper and make sure you have all the chemicals and apparatus that you may need.
5. All working MUST be clearly shown where necessary.
6. Mathematical tables and silent electronic calculators may be used.

FOR EXAMINER'S USE ONLY

QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
1	12	
2	12	
3	6	
TOTAL SCORE	30	

This paper consists of 4 printed pages

1. You are provided with :

- Acid solution of H_nX containing 0.06 moles in 1 dm^3 , labeled solution A.
- Sodium hydroxide, solution B containing 4g/l.
- Phenolphthalein indicator.

You are required to determine the basicity of acid A.

Procedure

Fill the burette with acid, H_nX solution A. Pipette 25 cm^3 of sodium hydroxide solution B and transfer it into a clean dry conical flask. Add 2 drops of phenolphthalein indicator. Titrate using the acid and record your results in the table below. Repeat the titration to obtain three consistent titres. (4 marks)

	I	II	III
Final burette reading (cm^3)			
Initial burette reading (cm^3)			
Volume of acid used (cm^3)			

(a) Determine the average volume of acid A used.

(1 mark)

(b) Calculate the concentration of sodium hydroxide solution B in moles per litre
(Na = 23, O = 16, H = 1)

(2 marks)

(c) Calculate the moles of sodium hydroxide used.

(2 marks)

(d) Calculate the moles of acid, H_nX used.

(1 mark)

(e) Determine the basicity of acid H_nX . (1 mark)

(f) Write a balanced chemical equation for the reaction. (1 mark)

2. You are provided with solid H.

a) Describe the appearance of the solid (1 mark)

.....
.....

b) Carry out the tests below to identify the ions present in substance H. Fill your observations and Inferences in the table below.

Experiment	Observations	Inferences
Scoop a spatula endful of solid H into a boiling tube and heat gently then strongly test for any gases produced	(2mks)	(1mk)
(i) Dissolve a spatula endful of solid H in distilled water and stir. Divide the solution into 3 portions	(1 mark)	(1 mark)
(ii) To the 1 st portion add 3 drops of barium nitrate solution	(1 mark)	(1 mark)
(iii) To the 2nd portion add 3 drops of lead (II) nitrate solution.	(1 mark)	(1 mark)
(vi) To the 5 th portion add 3 drops of dilute hydrochloric acid.	(1 mark)	(1 mark)

3. You are provided with solid K. Carry out the tests below. Write your observations and inferences in the spaces provide.

Experiment	Observations	Inferences
Using a clean metallic spatula, heat about one third of solid K in a Bunsen burner flame	(1mks)	(1mk)
Dissolve the remaining portion of solid K into about 2cm ³ of distilled water	(1 mark)	(1 mark)
Add two drops of bromine water.	(1 mark)	(1 mark)