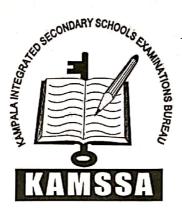
CANDIDATE'S NAME	 · · · · · · · · · · · · · · · · · · ·	 		
CENTRE / INDEX NO:				
545/3				
CHEMISTRY				
(PRACTICAL)				
Paper 3	1	 d riteri	1_ = 1.	
July- August 2023				
2 1/4 hours				



KAMSSA JOINT MOCK EXAMINATIONS

Uganda certificate of education CHEMISTRY PAPER 3 2 ½ hours

INSTRUCTIONS TO CANDIDATES:

- Answer all questions
- Record your answers on this question paper in the spaces provided.
- Mathematical tables and silent non- programmable calculators may be used.
- Reference books (i.e. text books, books on qualitative analysis, etc) should not be used.
- Candidates are not allowed to start working with the apparatus for the first 15
 minutes. This time is to enable candidates to read the question paper and make sure
 they have all the apparatus and chemicals that they may need.

FOR EXAMINER'S USE ONLY				
Q.1				
Q.2				
Total				

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Turn Over



- 1. You are provided with the following solutions.
 - * BA1 which is sodium hydroxide solution of unknown concentration.
 - ❖ BA2 which is a 2M sulphuric acid solution.

You are required to determine the molar concentration of sodium hydroxide solution.

Procedure:

- i. Measure and record the initial temperature t_1 of **BA1** using a thermometer.
- ii. Measure 30cm³ of BA1 using a measuring cylinder and transfer it into a clean plastic beaker.
- iii. Measure and record the initial temperature t₂ of BA2 and transfer it into a burette.
- iv. Add BA2 from the burette slowly to BA1 in the plastic beaker while stirring the solution mixture using a thermometer until the volume added is 10cm³. Note and record the maximum temperature t₃ reached by the solution.
- v. Without pouring the solution mixture, continue adding **BA2** from the burette and note the maximum temperature when the volume of **BA2** added are; 15.0, 20.0, 25.0, 30.0, 35.0, 40.0, and 45.0cm³.
- vi. Record your results in the table below.

Table 1 of results

Initial temperature t_1 of BA1 ${}^{0}C$	(0½ mark)
Initial temperature t ₂ of BA2 ⁰ C	(0½ mark)
Average initial temperature t ₀ ⁰ C	(0½ mark)

Volume of BA2 added (cm ³)	0.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0
Temperature of solution mixture t ₃ (°C)									- 1
Temperature change (°C)									
Temperature enange (e)									

(05 mark)

Questions

b) Use your graph to determine the;	(05½ marks)
i. The maximum temperature change	(01 marks)

Volume of BA2 that completely neutralized 30cm ³ of BA1.	(01 mark)
	olution= 4.2Jg ⁻¹ °C ⁻¹ , (02 marks)
The number of moles of BA2 that reacted	(01½ marks)
The enthalpy of neutralization of sodium hydroxide by sulphur	ric acid. (<i>03½ marks</i>)
etermine the molarity of sodium hydroxide in BA1.	
	leulate; The heat evolved at the end point. (Specific heat capacity of so density of solution = 1.0g/cm³). The number of moles of BA2 that reacted The enthalpy of neutralization of sodium hydroxide by sulphuse termine the molarity of sodium hydroxide in BA1.

••	
	You are provided with substance R , which contains two cations and one anion. Carry out the following tests to identify the two cations and anion in R . Identify any gases that may be evolved. Record your observation and deductions in the table below.
	Table 2

(25 marks)

TESTS	OBSERVATIONS	DEDUCTIONS
a) Heat a spatula endful of R		
strongly in a hard-dry test tube		
until there is no further		
change.		
b) To two spatula end-ful of R		
in a test tube, add about 10cm ³ of water and shake vigorously		
to dissolve.		
Then add dilute ammonia		
solution dropwise until in excess to the resultant		
solution.		
Title of the state		
Filter and keep both the filtrate and the residue.		
music and the residue.		

c) To the filtrate in (b), add		
dilute hydrochloric acid		
dropwise until the solution is		3.3
just acidic.		
Divide the acidic solution into		
five equal parts and test them		
as follows.		
i) To the first most of the		
i) To the first part of the acidic solution, add dilute		,
sodium hydroxide solution		
dropwise until in excess.		• ,
areprise and in execus,		
ii) To the second part of the	,	
acidic solution, add dilute		
ammonia solution dropwise		
until in excess.		
iii) To the third part of the		
acidic solution, add 3-4 drops		
of potassium iodide solution.		
iv) To the fourth part of the		
acidic solution, add 2-3 drops		
of lead (II) nitrate solution and		
warm		
v) To the fifth part of the		
acidic solution, carry out a test		
of your own choice in order to		
confirm the anion present in		
R.		

d) wash the residue with dilute		
ammonia solution and		
dissolve it in 4cm ³ of dilute	·	
hydrochloric acid. Divide the		
resultant solution into three		12 2
parts and test as follows		
i) To the first part of the		
solution, add dilute sodium		1"
hydroxide solution dropwise		
until in excess.		
ii) To the second part of the		
solution, add dilute ammonia		
solution dropwise until in		-51
excess		
iii) To the third part of the		
solution, add a few drops of		
potassium		
hexacyanoferrate(III) solution.		
•		
a) Identify the: -		
e) Identify the: -		
i) Cations in R:	And	
:: \ Anion in D:		

END