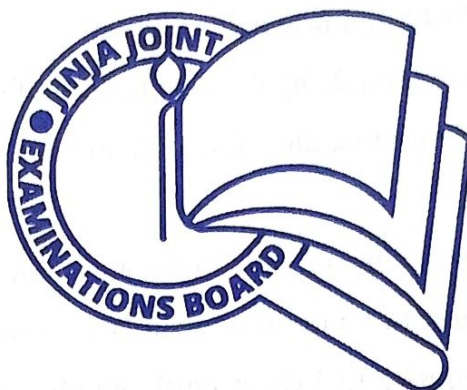


Name.....Center/Index number...../.....

545/4  
CHEMISTRY  
PRACTICAL  
Paper 4  
AUGUST, 2023  
2 hours



**JINJA JOINT EXAMINATIONS BOARD**

*Uganda Certificate of Education*

**MOCK EXAMINATIONS – AUGUST, 2023**

**CHEMISTRY**

**PRACTICAL**

**Paper 4**

**2 hours**

**INSTRUCTIONS TO CANDIDATES:**

- Answer *all* questions.
- Answers are to be written in the spaces provided.
- You are not allowed to use any reference books.
- All working must be clearly shown.
- Mathematical tables, slide rules and non-programmable silent electronic calculators may be used.
- [H=1, C=12, O=16, Na=23]

**For Examiner's use only**

Q1	Q2	TOTAL

1. You are provided with the following:

BA3; which is a 0.05M Sulphuric acid solution.

BA4; which is a solution made by dissolving 4.2g of salt, NaY in  $1\text{ dm}^3$  of water.

You are required to determine the value of Y in NaY.

Procedure:

- (a) Pipette  $25\text{ cm}^3$  (or  $20\text{ cm}^3$ ) of BA4 into a clean conical flask. Add 2-3 drops of methyl orange indicator and titrate with BA3 from the burette until the end point.
- (b) Repeat the procedure 2 to 3 times until you obtain consistent readings. Enter your results in the table below:

### RESULTS

Table

Volume of pipette Used = .....  $\text{cm}^3$

Final burette reading ( $\text{cm}^3$ )			
Initial burette reading ( $\text{cm}^3$ )			
Volume of BA3 used ( $\text{cm}^3$ )			

Titre values used to calculate average volume of BA3: .....

Calculate the average volume of BA3: .....

Questions:

(a) Calculate the number of moles of

(i) Sulphuric acid in BA3 which reacted with NaY

(ii) Salt, NaY in BA4 which reacted with the Sulphuric acid (2 moles of NaY react with 1 mole of sulphuric acid)

(iii) Salt, NaY, in  $1\text{dm}^3$  of solution BA4

(b) Determine the formular mass of salt, NaY and hence the value of Y in NaY  
(Na=23)

2. You are provided with substance Q which contains two cations and one anion. You are required to the identify the cations and anion in Q. Carry out the following tests on Q and where a gas(es) is evolved, it must be identified.

Enter your results in the table below:

TESTS	OBSERVATIONS	DEDUCTIONS
(a) Heat one spatula endful of Q first gently and then strongly until there is no further change.		
(b) To two spatula endfuls of Q in a boiling tube, add about $4\text{cm}^3$ of water		



and shake vigorously to dissolve.		
(c) To the resultant solution in (b), add sodium hydroxide solution dropwise until in excess. Shake and filter. Keep both the filtrate and residue for other parts.		
(d) Wash the residue from (c) and dissolve it in dilute nitric acid until there is no further change. Divide the acidic solution into parts.		
(i) To the first part of the acidic solution, add sodium hydroxide solution dropwise until in excess.		
(ii) To the second part of the acidic solution, add ammonia solution dropwise until in excess.		
(iii) To the third part of the acidic solution, add 1-2 drops of		

concentration nitric acid followed by ammonia solution dropwise until in excess.		
(e) To the filtrate from (c) add dilute nitric acid dropwise until the solution is just acidic. Divide the acidified filtrate into five parts		
(i) To the first part of the acidified filtrate, add sodium hydroxide solution dropwise until in excess.		
(ii) To the second part of the acidified filtrate, add 3-4 drops of dilute sulphuric acid.		
(iii) To the third part of the acidified filtrate. Add ammonia solution dropwise until in excess.		
(iv) To the fourth part of the acidified filtrate, add 3-4 drops of lead (II) nitrate		

solution and heat. Then allow to stand.		
Use the fifth part of the acidified filtrate to carry out a test of your own choice to confirm the anion in Q. Record test and observations. Test:		

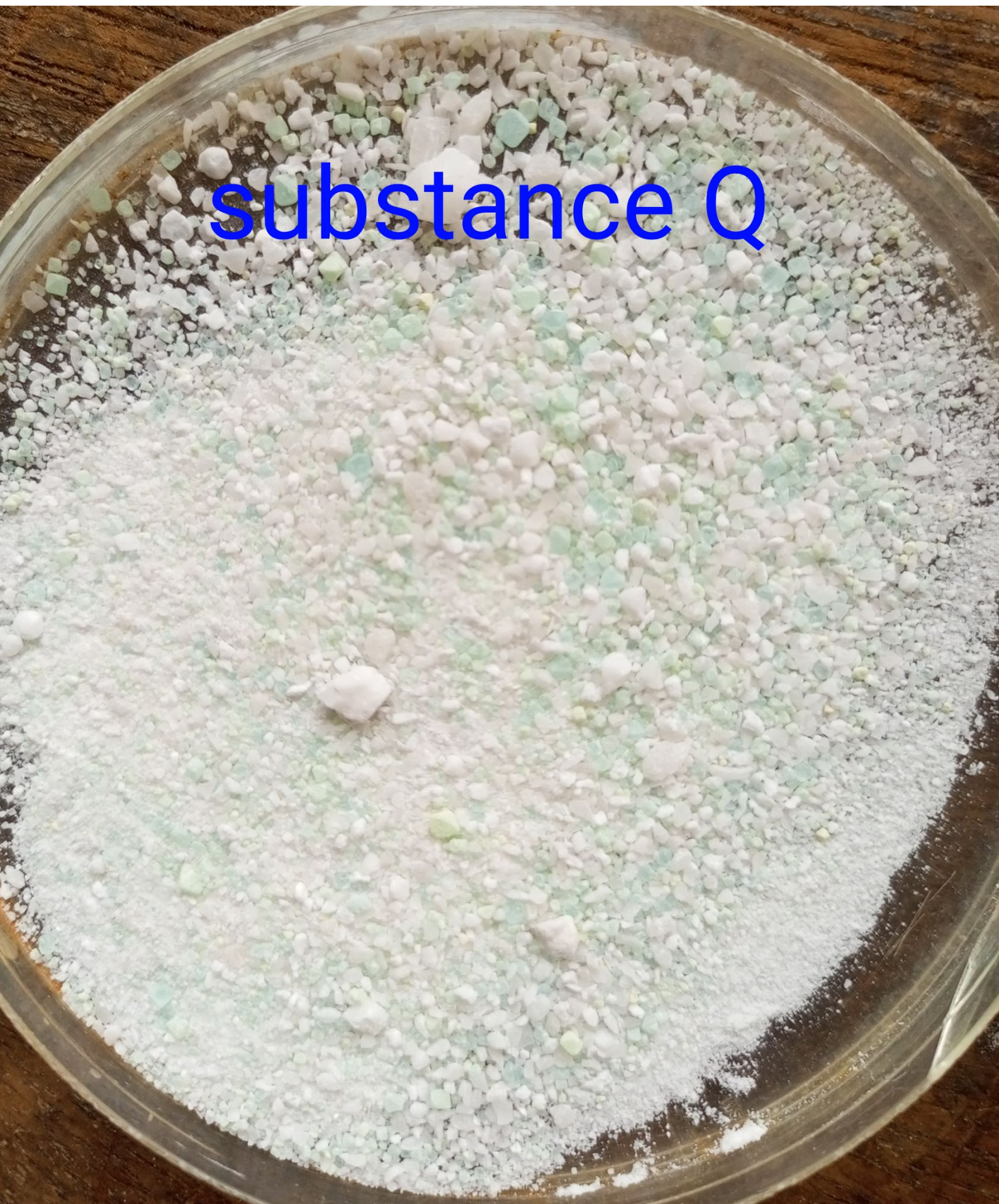
(f) Identify the

(i) Cations in

Q;.....and.....

(ii) anion in Q;.....





substance Q