

Qualitative Analysis (MCQ)

1. A student adds aqueous sodium carbonate to one test-tube and aqueous silver nitrate to a second test-tube.
The student adds dilute sulfuric acid to each test-tube.
Which row has the correct observations?

	Aqueous sodium carbonate	Aqueous silver nitrate
A	no change	precipitate
B	no change	no change
C	effervescence	no change
D	effervescence	precipitate

Your answer

[1]

2. Three qualitative tests are carried out on a solution of an unknown compound.

Test 1: On heating with NaOH(aq), a pungent smelling gas evolves which turns red litmus paper blue.

Test 2: On addition of AgNO₃(aq), a white precipitate forms which is soluble in dilute NH₃(aq).

Test 3: On addition of Na₂CO₃(aq), there is no visible reaction.

What is the unknown compound?

- A. ammonium bromide, NH₄Br
- B. ammonium chloride, NH₄Cl
- C. hydrochloric acid, HCl
- D. sodium chloride, NaCl

Your answer

[1]

3. HBr(aq), forms two ions in solution.

Which observation is correct for reactions of HBr(aq)?

- A. It effervesces addition of sodium carbonate solution.
- B. It forms a white precipitate on addition of silver nitrate solution.
- C. It turns orange on addition of silver nitrate solution.
- D. It turns brown on addition of potassium chloride solution.

Your answer

[1]

4. Two tests are carried out on an aqueous solution of copper(II) sulfate, $\text{CuSO}_4(\text{aq})$.

Test 1: Addition of potassium iodide solution

Test 2: Addition of barium chloride solution

Which of the following statements is / are true?

1: **Test 1** produces an off-white precipitate and a brown solution.

2: **Test 2** produces a white precipitate.

3: **Test 1** and **Test 2** are both redox reactions.

- A. 1, 2 and 3
- B. Only 1 and 2
- C. Only 2 and 3
- D. Only 1

Your answer

☐

[1]

5. Which statement about ammonium carbonate is **not** correct?

- A** It reacts with $\text{Ba}(\text{NO}_3)_2(\text{aq})$ to form a white precipitate.
- B** It effervesces with dilute nitric acid.
- C** It release an alkaline gas with warm $\text{NaOH}(\text{aq})$.
- D** It has the formula NH_4CO_3 .

Your answer

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[1]

END OF QUESTION PAPER

Mark scheme – Qualitative Analysis (MCQ)

Question			Answer/Indicative content	Marks	Guidance
1			D	1	<p><u>Examiner's Comments</u></p> <p>This question demonstrated a lack of practical skills with a many candidates unable to identify the false positive caused by the sulfate ion – the discriminator C was a common incorrect answer. This question proved to be the most difficult multiple choice question.</p>
			Total	1	
2			B	1	
			Total	1	
3			A	1	
			Total	1	
4			B	1	
			Total	1	
5			D	1 (AO 2.3)	<p><u>Examiner's Comments</u></p> <p>Most candidates knew that the formula given in D was incorrect.</p>
			Total	1	