AQA – Reactions of ions in aqueous solution – A2 Chemistry P3

1. June/ 2020/Paper_3/No.15

In the test for a halide ion in aqueous solution, dilute nitric acid is added before the addition of silver nitrate solution.

Why is nitric acid added?

[1 mark]

A It increases the concentration of nitrate ions. ⬭

B It prevents the precipitation of silver compounds other than halides. ⬭

C It prevents the silver nitrate being precipitated. ⬭

D It provides the acidic solution required for precipitation. ⬭

2. June/ 2020/Paper_3/No.21

Which compound decolourises acidified potassium manganate(VII) solution?

[1 mark]

A $Al_2(SO_4)_3$ ⬭

B $CuSO_4$ ⬭

C $FeSO_4$ ⬭

D $Fe_2(SO_4)_3$ ⬭

3. June/ 2019/Paper_3/No.18

What is observed when concentrated hydrochloric acid is added to an aqueous solution of $CuSO_4$ until no further change occurs?

[1 mark]

A A colourless gas is evolved and a precipitate forms. ⬭

B A colourless gas is evolved and no precipitate forms. ⬭

C A precipitate forms that dissolves in an excess of concentrated hydrochloric acid. ⬭

D The solution changes colour and no precipitate forms. ⬭

4. June/ 2019/Paper_3/No.19

What is the most suitable reagent for detecting the presence of carbonate ions in the presence of an excess of sulfate ions?

[1 mark]

A dilute NaOH(aq) ⬭

B dilute H_2SO_4(aq) ⬭

C $BaCl_2$(aq) ⬭

D NaCl(aq) ⬭

5. June/ 2019/Paper_3/No.20

Methylbenzene reacts with a mixture of concentrated nitric acid and concentrated sulfuric acid.

What is the name of the mechanism for this reaction?

[1 mark]

A Electrophilic addition ⬭

B Electrophilic substitution ⬭

C Nucleophilic addition ⬭

D Nucleophilic substitution ⬭

6. June/2021/Paper_3/No.4

0 4 This question is about Group 7 chemistry.

0 4 . 1 Give an equation for the reaction of solid sodium bromide with concentrated sulfuric acid to form bromine.

State **one** observation made during this reaction.

[2 marks]

Equation

Observation

0 4 . 2 A solution that is thought to contain chloride ions and iodide ions is tested.

1. Dilute nitric acid is added to the solution.
2. Aqueous silver nitrate is added to the solution.
3. A pale yellow precipitate forms.
4. Excess dilute aqueous ammonia is added to the mixture.
5. Some of the precipitate dissolves and a darker yellow precipitate remains.

Give a reason for the use of each reagent.

Explain the observations.

Give ionic equations for any reactions.

[5 marks]

7. June/2021/Paper_3/No.8

Which statement about chloride ions is **not** correct?

[1 mark]

A They form a white precipitate with silver nitrate solution that is soluble in dilute aqueous ammonia. ⬭

B They form an octahedral cobalt(II) complex when aqueous cobalt(II) ions are reacted with an excess of chloride ions. ⬭

C They form when chlorine reacts with potassium bromide solution. ⬭

D They have the electron configuration $1s^2 2s^2 2p^6 3s^2 3p^6$ ⬭

8. June/2021/Paper_3/No.12

Which statement about inorganic ionic compounds is **always** correct?

[1 mark]

A They dissolve in water to give neutral solutions. ⬭

B They release energy when they melt. ⬭

C They contain metal cations. ⬭

D They form giant structures. ⬭

9. June/2021/Paper_3/No.28

Which compound forms a white precipitate when added to aqueous silver nitrate?

[1 mark]

A bromoethane ⬭

B ethanal ⬭

C ethanoic anhydride ⬭

D ethanoyl chloride ⬭