

1 Compound **X** is an anhydrous, white solid which decomposes on heating to form a white solid residue, a colourless gas, and a colourless vapour which condenses to a colourless liquid.

Compound **X** is

- A** sodium carbonate.
- B** sodium hydrogencarbonate.
- C** sodium nitrate.
- D** sodium sulfate.

(Total for Question 9 = mark)

2 When a flame test is carried out on calcium iodide, the colour of the flame is

- A** yellow-red.
- B** pale green.
- C** purple.
- D** crimson.

(Total for Question 8 = mark)

3 What would be the experimental observations if chlorine gas was bubbled through potassium iodide solution, followed by the addition of cyclohexane?

- A The solution turns brown, then two layers are produced and the top layer is purple.
- B A white precipitate is formed, which then dissolves to leave a colourless solution.
- C Bubbles of gas are seen and then a brown precipitate is formed.
- D The solution remains colourless, and then two layers are seen with the bottom layer being brown.

(Total for Question 20 = mark)

4 The colour observed in a flame test is due to

- A electrons jumping to a higher energy level, absorbing energy.
- B electrons jumping to a higher energy level, emitting energy.
- C electrons dropping from a higher energy level, absorbing energy.
- D electrons dropping from a higher energy level, emitting energy.

(Total for Question 3 mark)

5 The best way to confirm the presence of **iodine** in an aqueous solution is

- A adding hexane to form a purple layer.
- B adding hexane to form an orange layer.
- C adding acidified silver nitrate solution to form a yellow precipitate which is soluble in concentrated ammonia.
- D adding acidified silver nitrate solution to form a yellow precipitate which is insoluble in concentrated ammonia.

(Total for Question 4 = mark)

6 Which silver halide is a cream coloured solid which darkens in sunlight and dissolves in concentrated ammonia solution?

- A AgF
- B AgCl
- C AgBr
- D AgI

(Total for Question 3 = mark)

7 Compound **X** is a white solid. On heating this compound, a colourless, acidic gas is the only gaseous product. A flame test is carried out on the solid residue and a reddish flame is observed.

Compound **X** is

- A calcium nitrate.
- B calcium carbonate.
- C magnesium carbonate.
- D strontium nitrate.

(Total for Question 5 = mark)

8 What colour precipitate would you expect to see if 1-bromopropane was heated with a solution of silver nitrate?

- A Orange
- B White
- C Yellow
- D Cream

(Total for Question 4 = mark)

9 What would be the colour of the solution when iodine is dissolved in a hydrocarbon solvent?

- A Grey
- B Brown
- C Yellow
- D Purple

(Total for Question 14 = mark)

10 Starch is often used as an indicator in titrations between sodium thiosulfate and iodine solutions. What colour change would you see at the end-point as sodium thiosulfate is added to iodine solution in the presence of starch?

- A Yellow to colourless
- B Colourless to yellow
- C Blue-black to colourless
- D Colourless to blue-black

(Total for Question 15 = mark)

11 A solid gives a red colour in a flame test and reacts with concentrated sulfuric acid to produce steamy fumes, but no other gases. The solid could be

- A** lithium bromide.
- B** strontium chloride.
- C** calcium bromide.
- D** sodium chloride.

(Total for Question 8 = mark)

12 What colour is the vapour which forms when concentrated sulfuric acid is added to solid potassium iodide?

- A** Green
- B** Orange
- C** Brown
- D** Purple

(Total for Question 11 = mark)

13 Most compounds of lead are insoluble, an exception being lead(II) nitrate. Therefore a good method of preparing lead(II) sulfate is

- A** adding dilute sulfuric acid to lead metal.
- B** adding concentrated sulfuric acid to lead metal.
- C** adding dilute sulfuric acid to lead(II) nitrate solution.
- D** adding dilute sulfuric acid to solid lead(II) oxide.

(Total for Question 11 mark)

14 Which concentrated acid would be best for mixing with a salt to carry out a flame test?

- A Hydrochloric acid
- B Nitric acid
- C Phosphoric(V) acid
- D Sulfuric acid

(Total for Question 3 = 3 mark)

15 The flame produced by a compound containing barium in a flame test is

- A colourless.
- B green.
- C red.
- D yellow.

(Total for Question 4 = 4 mark)

16 A drop of concentrated nickel(II) sulfate solution, which is green, is placed on moist filter paper on a microscope slide and the ends of the slide are connected to a 24 V DC power supply. After ten minutes,

- A a blue colour has moved towards the negative terminal and a yellow colour towards the positive terminal.
- B a blue colour has moved towards the positive terminal and a yellow colour towards the negative terminal.
- C a green colour has moved towards the negative terminal but there is no other visible change.
- D a green colour has moved towards the positive terminal but there is no other visible change.

(Total for Question 11 = 11 mark)

17 Chlorides of Group 1 elements produce coloured flames when

- A electrons become excited to a higher energy level.
- B excited electrons move from a higher to a lower energy level.
- C an outer electron leaves the atom.
- D electrons move between the negative and positive ions.

(Total for Question 8 = mark)

18 This question is about the following compounds.

- A Barium carbonate
- B Lithium nitrate
- C Potassium bromide
- D Potassium nitrate

(a) Which compound gives a green colour in a flame test?

(1)

- A
- B
- C
- D

(b) Which compound gives a lilac colour in a flame test and does **not** decompose on heating?

(1)

- A
- B
- C
- D

(Total for Question 9 = marks)