IGCSE (EDEXCEL) Chemistry : Chemical analysis answers

Q1. M1 Flame test M2 Yellow

Q2. (a) C 1 and 3 only (b) (i) White

Q3. Relights a glowing splint

Q4.

(a i) M1 Anhydrous $CuSO_4$, M2 White to blue

(b ii) M1. Measure b.p. or m.p., M2 100 degrees C or 0 degrees C

Q5. (i) A decomposition (ii) C green to black

Q6.

M1 add sodium hydroxide (solution)

M2 test (gas / ammonia) with (damp) red litmus paper / (damp) universal indicator paper

M3 (red litmus) turns blue / universal indicator) turns blue / purple

Q7. M1 Flame test M2 orange-red / brick red

Q8. (a)

M1 copper(II) carbonate is green

M2 copper(II) carbonate is insoluble / cannot form a solution OWTTE

(b) Description including six of following points

(Test for potassium ions)

M1 flame test M2 lilac flame

(Test for carbonate ions)

M3 add acid (to mixture of solids/solution)

M4 (pass / bubble) gas / carbon dioxide into limewater

M5 which goes cloudy / milky / white ppt forms

(Test for iodide ions)

M6 (add dilute nitric acid followed by) silver nitrate (solution)

M7 yellow ppt / solid

Q9. (i) (bright) white flame (ii) (product/magnesium oxide is) basic / a base

Q10.

(a) M1 potassium dichromate (VI) M2 (dilute) sulfuric acid

(b) B orange to green

Q11. M1 add silver nitrate / $AgNO_3$ (solution) M2 white precipitate

Q12.

M1 bubble / pass / add the gas / carbon dioxide into limewater

M2 (limewater) turns cloudy / milky

Q13. (i) $2Li + Cl_2 \rightarrow 2LiCl$

(ii) A description that refers to the following five points

Test for lithium ions

M1 flame test M2 red (flame)

Test for chloride ions

M3 add nitric acid

M4 add silver nitrate (solution)

M5 white precipitate

Q14.

M1 add (dilute) acid before adding the barium chloride

M2 white precipitate

Q15.

(i) An explanation that links the following two points

M1 to remove any other ions / chemicals / impurities / contaminants / compounds / substances (that may be on the wire)

M2 (so that) they do not interfere with / mask the colour of the flame

(ii) D yellow

Q16. A description which refers to the following six points

Test for ammonium ions:

M1 add sodium hydroxide (solution) (and warm)

M2 test the gas with (damp) (red) litmus paper / (damp) universal indicator paper

M3 (litmus) turns blue / (universal indicator) turns blue / purple (if ammonium ions are present)

Test for sulfate ions:

M4 add (dilute hydrochloric/nitric) acid

M5 add barium chloride (solution) / barium nitrate (solution)

M6 white precipitate (if sulfate ions are present)

Q17.

(a i) (squeaky) pop with lighted splint

(a ii) M1 (damp) litmus paper / universal indicator M2 bleached

Q18 A description that refers to any six of the following points

M1 do a flame test

M2 sodium chloride produces a yellow flame

M3 add acid

M4 potassium carbonate effervesces / bubbles

M5 add dilute nitric acid

M6 add silver nitrate (solution)

M7 potassium chloride gives a white precipitate

M8 potassium iodide gives a yellow precipitate

Q19. A description that makes reference to the following 6 points

Test for cation

M1 add sodium hydroxide (solution)

M2 if blue precipitate forms solution contains copper(II) ion(s) / contains Cu^{2+} / is a copper compound

M3 if green precipitate forms solution contains iron(II) ion(s) / contains Fe^{2+} / is an iron compound

Test for anion

M4 add silver nitrate (solution)

M5 if white precipitate forms solution contains chloride ion(s) / contains Cl^- / is a chloride

M6 if cream precipitate forms solution contains bromide ion(s) / contains Br^- / is a bromide

Q20.

(test for Ca^{2+} ions)

M1 flame test (allow description of a flame test)

M2 orange-red flame colour

(test for Cl^- ions)

M3 add silver nitrate

M4 white precipitate

Q21. Potassium

Q22. Any one from:

M1 (hydrochloric acid/it) contains chloride ions

M2 (hydrochloric acid/it) produces a (white) precipitate with silver nitrate

M3 (hydrochloric acid/it) reacts with silver nitrate

Q23. (a i) Any two from:

M1 (lithium) moves (on the surface)

M2 (lithium) gets smaller / disappears

M3 colourless solution forms

(a ii) (when mixed with air) lit spill / splint or flame gives (squeaky) pop

(b) Any one from:

M1 more rapid bubbles / fizzing / effervescence

M2 turns into a ball

M3 moves more quickly

M4 catches alight / burns / produces a flame

Q24. (a) Li^+

(b) silver bromide / AgBr

(c) lithium bromide / LiBr

(d i) Impurities / other ions / other substances could alter / interfere with the colour of the flame / with the results of the test OWTTE

Q25.

Test	Observation
addition of acidified barium chloride solution	white precipitate
addition of sodium hydroxide solution	brown precipitate
Addition of sodium hydroxide and gas tested with universal indicator paper	(universal indicator) turns blue/indigo/purple

Q26. M1 Flame test M2 blue-green

Q27. Cream

Q28.

(test for Li^+ ions)

M1 flame test (allow description of a flame test)

M2 red flame colour

(test for I^- ions)

M3 add silver nitrate

M4 yellow precipitate

Q29. A description that makes reference to the following 6 points

Test for cation

M1 add sodium hydroxide (solution)

M2 if blue precipitate forms solution contains copper (II) ion(s) / contains Cu^{2+} / is a copper compound

M3 if brown precipitate forms solution contains iron (III) ion(s) / contains Fe^{3+} / is an iron compound

Test for anion

M4 add silver nitrate (solution)

M5 if yellow precipitate forms solution contains iodide ion(s) / contains I^- / is a iodide

M6 if cream precipitate forms solution contains bromide ion(s) / contains Br^- / is a bromide

Q30. Lithium

Q31. Calcium

Q32.

M1 test (gas / ammonia) with (damp) red litmus paper / (damp) universal indicator paper

M2 (red litmus) turns blue / universal indicator) turns blue / purple