

# Identification of Ions and Gases

## Mark Scheme 7

<b>Level</b>	IGCSE
<b>Subject</b>	Chemistry
<b>Exam Board</b>	CIE
<b>Topic</b>	Acids, Bases and Salts
<b>Sub-Topic</b>	Identification of Ions and Gases
<b>Paper Type</b>	Alternative to Practical
<b>Booklet</b>	Mark Scheme 7

**Time Allowed:** 47 minutes

**Score:** /39

**Percentage:** /100

- 1 (a) white (1) crystals/solid (1) (2)
- (c) white (1) precipitate (1) (2)
- (ii) white (1) precipitate (1) (2)
- (iii) reference to smell (1) alkaline/blue (1) pH 9 → 12 (1) **2 max** (2)
- (d) ammonia (1) (1)
- (e) alkaline gas/ammonia given off (1)
- acid gas/hydrogen chloride given off (1) (2)
- 2 (a) litmus/indicator (1)
- bleached in chlorine, no effect with sodium chloride (1) (2)
- (b) sodium hydroxide (1)
- green (precipitate) with iron(II), brown (precipitate) with iron(III) (1) (2)
- (c) add hydrochloric acid (1)
- fizz/bubbles with carbonate, no reaction with sulphate (1) (2)
- alternative with HCl and barium chloride (1)
- white precipitate with sulphate, not carbonate (1)
- 3 chromatography (1) apply inks/spots to paper (1)
- organic solvent/water (1) rises up paper (1)
- check heights/positions of spots (1) compare to find ink from banknote (1) (6)

N.B. all marks can be obtained from a diagram

- 4 (c) effervescence/fizz/bubbles (1)  
limewater milky (1)/blue solution [2]
- (d) (ii) blue (1) precipitate (1)  
royaVdark blue (1) solution (1) [4]
- (e) (i) white (1) precipitate (1)  
dissolves (1) [3]  
(ii) white (1) precipitate (1)  
dissolves (1) [3]
- (f) Solid D is a sulphate (1) hydrated (1) [2]
- (g) copper (1)/Cu<sup>2+</sup> (2) [2]