

# Identification of Ions and Gases

## Mark Scheme 4

<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 4

**Time Allowed:** 53 minutes

**Score:** /44

**Percentage:** /100

- 1 (b) pH of solution L 11-14 [1]
- (d) (i) blue precipitate (1) both for one mark (soluble in excess = 0) [1]
- (ii) white (1) precipitate (1)  
dissolves/clears/soluble in excess (1) [3]
- (c) weak (1) alkali/base (1) or ammonia (2) [2]
- (d) hydrochloric acid (2)  
or acid (1) chloride ion (1) **not** chlorine ion [2]
- 2 (a) pestle/mortar/solvent/sand (any three)  
ignore water and/or heat [3]
- (b) NB marks can be obtained from a diagram  
chromatography or chromatogram (1)  
paper (1)  
apply spot/extract to paper (1)  
description or name of solvent used (1)  
and separation e.g. spots on paper (1) (max 4) [4]
- If water used as solvent (max 3)  
If paper dipped into extract (max 3)  
If method would not work (max 2)

## 3 Tests on solid T

(b) (ii) white (1) precipitate (1) insoluble in excess (1) [2]

(iii) no/slight (1) precipitate (1) max 4 for (ii) and (iii) [2]  
no reaction (1) only

(e) weak (1) acids (1) [2]

(f) copper present(1) ethanoic acid/organic salt (1) [2]

**[Total: 8]**

## 4 (a) test red litmus (1) or other named indicator

result blue (1) [2]

(b) fractional (1) distillation (1) fractionation (1) [2]

(c) blue cobalt chloride paper (1) turns pink (1)

OR anhydrous/white copper sulphate (1) turns blue (1) [2]

(d) catches fire owtte (1) [1]

**[Total: 7]**

- 5 (a) solution K blue/green not precipitate [1]
- (c) tests on solution K
- (i) blue (1) precipitate (1) [2]
  - (ii) blue precipitate [1]  
deep/royal (1) blue solution or precipitate dissolves (1) [2]
  - (iii) no reaction/change/nothing [1]
  - (iv) white precipitate [1]
- (d) tests on solution L
- (iii) no reaction/change/nothing [1]
  - (iv) white precipitate [1]
- (e) acids [1]
- (f) iron (1) (III) (1) or  $\text{Fe}^{3+}$  (2) ignore anions [2]

**[Total: 13]**