# Identification of Ions and Gases

Mark Scheme 4

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- **Time Allowed:** 53 minutes
- **Score:** /44
- **Percentage:** /100
1. (b) pH of solution L 11-14

(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) no reaction (1) only [2]

(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

(c) tests on solution K
   (i) blue (1) precipitate (1)
   (ii) blue precipitate
        deep/royal (1) blue solution or precipitate dissolves (1)
   (iii) no reaction/change/nothing
   (iv) white precipitate

(d) tests on solution L
   (iii) no reaction/change/nothing
   (iv) white precipitate

(e) acids

(f) iron (1) (III) (1) or Fe$^{3+}$ (2) ignore anions

[Total: 13]