

**2003 Chemistry SG Credit
Finalised Marking Instructions**

Strictly Confidential

These instructions are **strictly confidential** and, in common with the scripts entrusted to you for marking, they must never form the subject of remark of any kind, except to Scottish Qualifications Authority staff. Similarly, the contents of these instructions must not be copied, lent or divulged in any way now, or at any future time, to any other persons or body.

Markers' Meeting

You should use the time before the meeting to make yourself familiar with the question paper, instructions and any scripts which you have received. Do **not** undertake any final approach to marking until **after** the meeting. Please note any points of difficulty for discussion at the meeting.

Note: These instructions can be considered as final only after the markers' meeting when the full marking team has had an opportunity to discuss and finalise the document in the light of a wider range of candidates' responses.

Marking

The utmost care must be taken when entering and totalling marks. Where appropriate, all summations for totals must be carefully checked and confirmed.

Where a candidate has scored zero marks for any question attempted, "0" should be entered against the answer.

Recording of Marks

The mark for each **question**, where appropriate, should be entered **either** on the grid provided on the back page of the answer book, **or** in the case of question/answer books, on the grid (if provided) on the last page of the book. Where papers assess more than one element, care must be taken to ensure that marks are entered in the correct column.

The **Total** mark for each paper or element should be entered (in red ink) in the box provided in the top-right corner of the front cover of the answer book (or question/answer book).

Always enter the **Total** mark as a **whole number**, where necessary by the process of rounding up.

The transcription of marks, within booklets and to the Mark Sheet, should always be checked.

Markers are reminded that they must not write comments on scripts.

**2003 Standard Grade Chemistry
Credit Level**

Marking Instructions

Part 1 – 20 marks

1	(a)	A and C	1 or 0	CLOSED
	(b)	E	1 or 0	
2	(a)	A and E	1 or 0	CLOSED
	(b)	B and E	1 or 0	CLOSED
3	(a)	F	1 or 0	
	(b)	C and D	1 or 0	CLOSED
	(c)	A and C	2 or 1 or 0	OPEN
4		A and C	2 or 1 or 0	OPEN
5		C and E	2 or 1 or 0	OPEN
6		C and D	2 or 1 or 0	OPEN
7		B and C	2 or 1 or 0	OPEN
8	(a)	C	1 or 0	
	(b)	A	1 or 0	
9	(a)	A and D	1 or 0	CLOSED
	(b)	C	1 or 0	

Please note that there are **NO HALF MARKS** in Part 1.

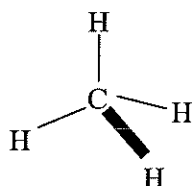
Part 2 – 40 marks

10 (a) is a chemical which burns giving out energy
burns/reacts with oxygen $\frac{1}{2}$
(**not** exothermic/reacts) 1 mark

(b) (i) $\text{CH}_4 + 2\text{O}_2 \longrightarrow \text{CO}_2 + 2\text{H}_2\text{O}$
(accept multiples/fractions) 1 mark

(ii) carbon (soot)
(**not** carbon oxide/charcoal/sulphur dioxide/smoke) 1 mark

(c) 1 mark



must be an attempt to show a tetrahedral shape (symbols not needed but if shown must be correct)(arrows etc could be used for bonds)

11 (a) (i) isotopes 1 mark

(ii) 35 or Ci (**not** lighter ones)(deduct $\frac{1}{2}$ for **any** units shown) 1 mark

(b) the positive nuclei are attracted to the negative electrons
(answer must clearly indicate that **both** atoms are involved)
(reference to attraction between protons and electrons $\frac{1}{2}$ if unclear that **two** atoms involved) 1 mark

(c)

Particle	Number	Marks
proton	17	$\frac{1}{2}$
neutron	18	$\frac{1}{2}$
electron	18	1

- 12 (a) both labels correct ($\frac{1}{2}$)
 both scales correct ($\frac{1}{2}$) (must used $\frac{1}{2}$ height/width)
 plots correct ($\frac{1}{2}$) (allow $\frac{1}{2}$ box tolerance)
 joining points ($\frac{1}{2}$)
 (bar chart/spike graph – maximum 1)
 (accept axes either way round) 2 marks
- (b) read from graph +/-2 seconds (units not required)
 (deduct $\frac{1}{2}$ if wrong units given) 1 mark
- (c) $\text{Zn} + 2\text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$
 1 mole 1 mole $\frac{1}{2}$
 65.5g 2g $\frac{1}{2}$
 32.75g (32.8) (33 if working shown) 1g $\frac{1}{2}$ 1 mark
- 13 (a) silver nitrate (solution)(**not** silver) 1 mark
- (b) covalent (network)(molecule)(double)(polar) 1 mark
- (c) hydrogen 1 mark
- (c) (fractional) distillation/distilling
 (**not** evaporation + condensation) 1 mark
- 14 (a) (i) addition(al)/adding
 (not addition polymerisation) 1 mark
- (ii)
- $$\begin{array}{ccccccc} & \text{H} & & \text{Br} & & \text{H} & \\ & | & & | & & | & \\ \text{H} & - \text{C} & - & \text{C} & - & \text{C} & - \text{H} \\ & | & & | & & | & \\ & \text{Br} & & \text{H} & & \text{H} & \end{array}$$
- (must be 1, 2 – dibromoethane) 1 mark
- (b)
- $$\begin{array}{cccccc} & \text{H} & & \text{CH}_3 & & \text{H} & & \text{CH}_3 & & \text{H} & & \text{CH}_3 \\ & | & & | & & | & & | & & | & & | \\ \sim & \text{C} & - & \text{C} & - & \text{C} & - & \text{C} & - & \text{C} & - & \text{C} & \sim \\ & | & & | & & | & & | & & | & & | \\ & \text{H} & & \text{H} & & \text{H} & & \text{H} & & \text{H} & & \text{H} \end{array}$$
- (allow two neighbouring methyl groups)
 (**not** H atoms at ends) 1 mark

15 (a) $6\text{Na}^+(\text{aq})$ and $6\text{Cl}^-(\text{aq})$ (treat separately – ½ mark each)
(any wrong ion – 0) 1 mark

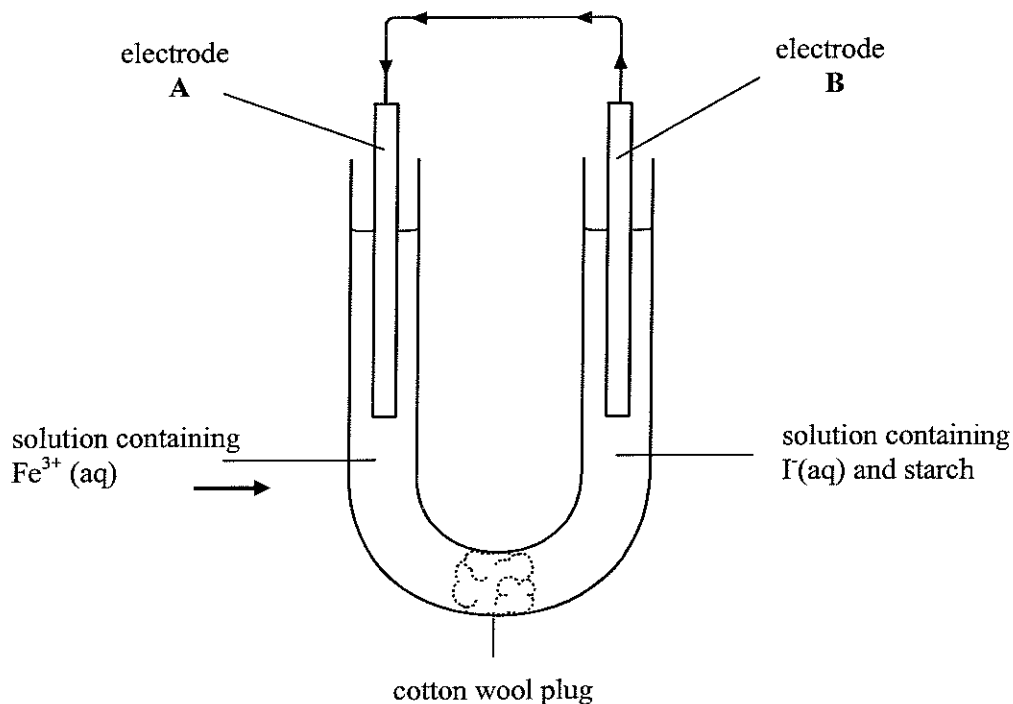
(b) filtration/filtering 1 mark

(c) $\text{Ca}_3(\text{PO}_4)_2$ FM = $(3 \times 40) + (2 \times 31) + (8 \times 16) = 310\text{g}$ (1 mark)

$$\% \text{ calcium ions} = \frac{120 \times 100}{310} \quad (\frac{1}{2} \text{ mark})$$

= 38.7% (½ mark)(accept 39)(not 38) 2 marks

16 (a) (i)



arrows must be on/close to wire (**not in solutions**) 1 mark

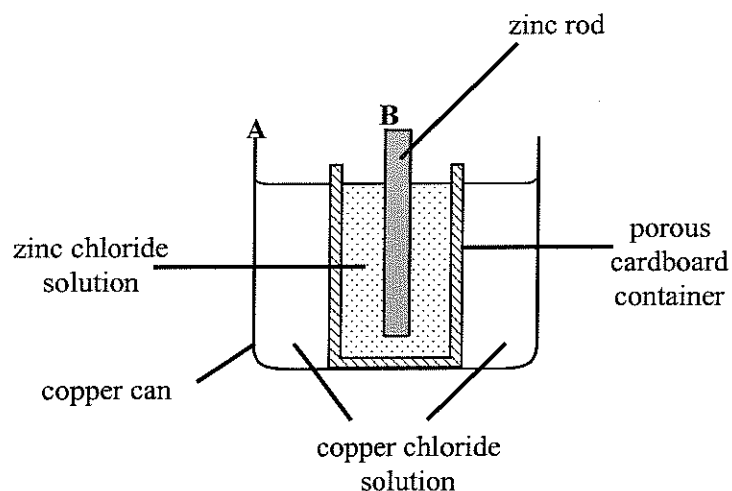
(ii) reduction 1 mark

(b) (i) blue/black colour would appear (allow blue/black/purple)
(**not** black solid or any other colour)
(**not** iodine forming) 1 mark

(ii) $2\text{I}^-(\text{aq}) \rightarrow \text{I}_2(\text{s}) + 2\text{e}^-$ (or correct variant)
(**not** $\text{I} \rightarrow \text{I} + \text{e}^-$)(ignore state symbols)(deduct ½ for “=”) 1 mark

- 17 (a) enzyme/acid/catalyst/biological catalyst
(amylase/hydrochloric acid, HCl – ½) 1 mark
- (b) hydrolysis/hydrolysisation 1 mark
- (c) respiration (aerobic)
(not anaerobic/combustion/oxidation/breathing) 1 mark
- (d) fructose/galactose 1 mark
- 18 (a) 2, 8, 1 1 mark
- (b) (i) as you go from lithium to neon the ionisation energy increases
rises (from 500 kJ to 2000 kJ)/increase
(**not** any reference to up/down/up down) 1 mark
- (ii) as you go down a group the ionisation energy decreases
decreases/goes down 1 mark

19 (a) (i)



other positions allowed if current would be detected 1 mark

(ii) the glass beaker does not allow the ions to flow
(general idea of cardboard container allowing ions to flow or acting as ion bridge or allowing solutions to mix or come into contact)
(**not** any reference to electrons or glass non – conductor or incomplete circuit) 1 mark

(iii) lowers/drops/voltage drops 1 mark

(b) $FM = 63.5 + 71 = 134.5g$ $\frac{1}{2}$

$n = \text{conc} \times \text{vol}$ $\frac{1}{2}$
 $= 0.05 \text{ moles}$ $\frac{1}{2}$

$\text{mass} = 0.05 \times 134.5 = 6.7g$ $\frac{1}{2}$ 2 marks

[END OF MARKING INSTRUCTIONS]