

2002 Chemistry SG General
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.

2002 Standard Grade Chemistry
General Level

Marking Instructions

Part 1 – 20 marks

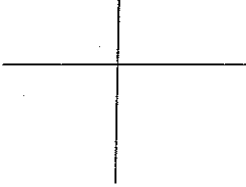
1	(a)	B		1 or 0	
	(b)	A		1 or 0	
	(c)	E		1 or 0	
2	(a)	B		1 or 0	
	(b)	E and F	both for	1 or 0	CLOSED
	(c)	A		1 or 0	
3	(a)	A and B	both for	1 or 0	CLOSED
	(b)	B and F	both for	1 or 0	CLOSED
	(c)	C		1 or 0	
4	(a)	B		1 or 0	
	(b)	C		1 or 0	
	(c)	D and E	both for	1 or 0	CLOSED
5	(a)	A and C	both for	1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

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

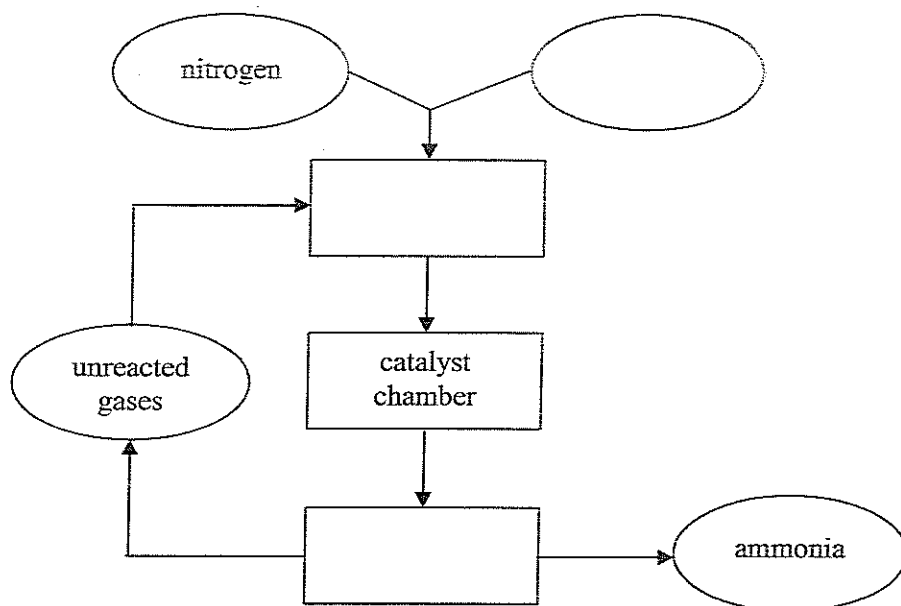
Part 2 – 40 marks

	Accepted	Not Accepted
9	<p>(a) thermosetting thermal set thermalsetting thermosetting plastic</p> <p>(b) good conductor of heat conductor of heat thermal conductivity conducts heat strong/strength</p> <p>durable/durability unreactive/does not decompose does not corrode lets heat pass through hardwearing</p>	<p>thermo plastic poly set</p> <p>malleable rusts high melting point conducts non-toxic/does not give off poisonous gases hard or ridged conducts energy takes in heat stick to heat rings boiling point heat resistant</p>
10	<p>(a) it contains C + H only Must mention only</p> <p>(b) (i) thin (line) bars spikes bars must have names or a key that works no label "fraction"</p> <p>horizontal bar graph 1 plotting error</p> <p>bars plotted ± box</p>	<p>mixture of C + hydrogen contains C + hydrogen molecules contains C + H₂ it contains both carbon and hydrogen</p> <p>poor scale (- ½) missing % label (- ½) line graph (max of 1 mark if all other info correct) bars not plotted (max 1) labels + axis present if a bar is missing (not plotted) (- ½) must use at least ½ of the graph paper on each axis or (- ½) letter with no key (- ½)</p>
11	<p>residue bottom/last fraction 34 34%</p> <p>if number or label from bar graph the one with the highest boiling point</p>	<p>fraction 5</p>

	Accepted	Not Accepted
11	<p>(a) (i) idea that chemicals used up/ran out metal rod/paste/metal/electrodes used up</p> <p>(ii) must mention – potassium hydroxide KOH</p> <p>(iii) ions can move/completes the circuit it does not conduct as a solid it must be in solution/molten to conduct electrolyte</p> <p>(b) acid/sulphuric acid/acidic named acid</p> <p>(c) safer/portable/lower voltage anything to do with safety don't need a socket/plug</p>	<p>dried up/ions run out/e's used up the chemicals can no longer swap e's e's can't flow/nothing to do with e's circuit switched off rot away/products used up</p> <p>description of an alkali paste is alkali hydroxide is present manganese dioxide + potassium hydroxide</p> <p>mention electrons solid can't produce electricity paste conducts better because it wouldn't work just "ionic"</p> <p>an alkaline one</p> <p>cheaper safer + cheaper (cancel error) rechargeable DC supply batteries are smaller stops using fossil fuels</p>
12	<p>(a) T, R, S</p> <p>(b) size/mass/weight of metal particle size/surface area volume of metal temperature</p> <p>(c) too reactive – idea explosive very reactive bursts into flames</p> <p>(d) burns with a pop lighted taper – it pops</p>	<p>amount of metal volume of water size of beaker type of water size of test tube</p> <p>dangerous very reactive gas</p> <p>glowing splint the pop test</p>

	Accepted	Not Accepted
13	<p>(a) no state symbols $S + O_2 \rightarrow SO_2$</p> <p>½ mark for one error eg formula or plus sign missing ½ mark for = sign</p> <p>ignore charges ignore heat as a reactant ignore attempt at balancing</p> <p>(b) covalent</p> <p>ignore other words eg double, network</p> <p>(c) below 7 (any number) acidic, acid</p>	<p>word equation</p> <p>pH1 – 7 3 → upwards low pH</p>
14	<p>(a)  (½ mark)</p> <p>headings (½ mark) eg strength, percentage</p> <p>1 mark all correct entries ½ if one entry missing or incorrect eg bar or bar x % missing horizontal table</p> <p>(b) (i) enzyme</p> <p>(ii) ethanol, ethanal, ethyl alcohol + slight variations</p> <p>(iii) turns lime water (½) milky or cloudy (½)</p>	<p>substances as a heading name</p> <p>bar chart</p> <p>biological catalyst zymase</p> <p>alkanol</p>

15 (a)



Accepted		Not Accepted
	4 entries → ½ mark each	
	1. nitrogen/N ₂	N
	2. unreacted/unused/re-cycled gases Nitrogen + Hydrogen/N ₂ + H ₂	N + H
	3. catalyst chamber/catalyst/iron iron catalyst	wrong formula
	4. ammonia/NH ₃ /Nitrogen hydride	
(b)	Haber process (various spelling okay)	
(c)	air/atmosphere/liquified air	plants or air (cancel error)
16 (a)	neutralisation	
(b)	filtration/filtering filtration description, explain process	

	Accepted	Not Accepted
	<p>(e) copper does not react with acid copper is below Hydrogen in the ECS idea of no reaction copper is unreactive copper neutralises the acid copper below Hydride in the activity copper is below H₂</p>	<p>mention dissolving</p> <p>it wouldn't work with acid not a good reaction/slow</p> <p>stays the same</p>
17	<p>(a) (i) bacteria nodules root nodules nitrogen fixing bacteria legumes/leguminous nitrify bacteria</p> <p>(ii) thunder storms lightning</p>	<p>contains enzymes fixation – word special things on roots</p> <p>thunder sparks/spark plugs electricity static electricity</p>
	<p>(b) insoluble (words to that effect) can't dissolve</p>	
	<p>(c) potassium K</p>	<p>wrong symbol</p>
18	<p>(a) alloys</p>	
	<p>(b) it decreases or goes down</p> <p>goes down then up at 65%</p>	<p>down then up</p>
	<p>(c) 210-220 units not needed</p>	

Accepted			Not Accepted	
19	(a)	(i)	aluminium oxide dialuminium trioxide	Al_2O_3 alumina
		(ii)	transition transition metal compound	
	(b)	graphite	carbon rod	

[END OF MARKING INSTRUCTIONS]