

# **GCSE**

Science: Single Award B (1535)

Science: Double Award B (1536)

Separate Sciences: Biology B (1529), Chemistry B (1539), Physics B (1549)

Summer 2005

advancing learning, changing lives

Mark Scheme (Results)

1C/5657 1C/5637 4C/5658 4C/5638

#### USING THE MARK SCHEME

- 1. This mark scheme gives you;
- \* an idea of the type of response expected
- \* how individual marks are to be awarded
- \* the total mark for each question
- \* examples of responses that should not receive credit.
- 2. ; separates points for the award of each mark.
- 3. / means that the responses are alternatives and either answer should receive full credit.
- 4. () means that a phrase/word is not essential for the award of the mark but helps the examiner to get the sense of the expected answer.
- 5. Phrases/words in **bold** indicate that the <u>meaning</u> of the phrase/word is **essential** to the answer.
- 6. **OWTTE** (or words to that effect) and eq (equivalent) indicate that valid alternative answers (which have not been specified) are acceptable.
- 7. 'Ignore' means that this answer is not worth a mark but does not negate an additional correct response.
- 8. 'Reject' means that the answer is wrong and negates any additional correct response for that specific mark.
- 9. ORA (or reverse argument) indicates that the complete reverse is also valid for the award of marks.
- 10. ecf (error carried forward) means that a wrong answer given in an earlier part of a question is used correctly in answer to a later part of the same question.

#### MARKING

- 1. You must give a tick (in red) for every mark awarded. The tick must be placed on the script close to the answer. The total mark awarded for a question should be written in the box at the end of the question.
- 2. The total marks for a question should then transferred to the front of the script.
- 3. Suggestion/explanation questions should be marked correct even when the suggestion is contained within the explanation.
- 4. **Do not** award marks for repetition of the stem of the question.
- 5. Make sure that the answer makes sense. Do not give credit for correct words/phrases which are put together in a meaningless manner. Answers must be in the correct scientific context.

### **AMPLIFICATION**

- 1. In calculations, full credit must be given for a <u>bald</u>, correct answer. If a numerical answer is incorrect, look at the working and award marks according to the mark scheme.
- 2. Consequential marking should be used in calculations. This is where a candidate's working is correct but is based upon a previous error. When consequential marks have been awarded write "ecf" next to the ticks.
- 3. If candidates use the mole in calculations they must be awarded full marks for a correct answer even though the term may not be on the syllabus at their level.
- 4. If candidates use chemical formulae instead of chemical names, credit can only be given if the formulae are correct.

### QUALITY OF WRITTEN COMMUNICATION

Students will be assessed on their ability to:

- present relevant information in a form that suits its purpose
- ensure that spelling, punctuation and grammar are accurate, so that the meaning is clear
- use of a suitable structure and style of writing.
- use ✓c or Xc to show if the communication mark is given or not.

## Mark Scheme

If there are two question numbers, the first refers to the Foundation tier paper and the second to the Higher tier paper.

1			brewing beer - to make alcohol; washing clothes - to remove some stains; making cheese - to make solids from milk	3				
			Total 3 mark	S				
2	a)		correct structure; C <sub>3</sub> H <sub>8</sub>	2				
_	b) c)		carbon; hydrogen; (any order) or symbols - not carbon dioxide	2 1				
			Total 5 mark	S				
3	a)	i) ii)	· · · · · · · · · · · · · · · · · · ·	1 1				
	b)	i) ii)	(,,,,,,,,,,,	1 1				
	c)		2 electrons in the only shell; accept Xs, circles etc.	3				
			If p and n marks not given allow 1 mark if clearly in centre					
	Total 7 marks							
4/2	a) b)	i)	contains large(r) molecules/more(carbon)atoms/longer chains/heavier	1 1				
		ii)	molecules; incomplete combustion/carbon(in flame)/lack of oxygen (ignore air)/too much or more carbon;	1				
	c)		different to accepted ideas /no evidence/can't dig deep enough;	1				
	d)		less (unsightly) waste/less litter /less land fill/easier to dispose of/less of a hazard/ less pollution from burning;					
			plus 1 communication mark for ensuring that spelling, punctuation and	3				
			grammar are accurate, so that the meaning is clear; (If clear bullet points then just reasonable spelling)					
			Total 7 mark	S				
5/1	a)		17; liquid;	2				
	b)	i)	chlorine more reactive (than bromine); ORA bromine <u>displaced/displacement</u> (reaction); ignore equations	2				
	c)	ii)	too or more reactive/not much available/would also displace chlorine; $2Na + Cl_2 \rightarrow 2NaCl$ correct reactants; correct product;	1				
			Accept 2NaCl reversed ie 2ClNa. Ignore state symbols or energy	3				
			references.  Total 8 mark	S				

3	a) b)	i)	thermal; decomposition; any two from:	2
	D)	1)	water absorbed/disappears; quick lime cracks/crumbles/swells/expands/forms powder; steam;	2
		ii)	CaO + $H_2O \rightarrow Ca(OH)_2$ reactants; product; incorrect balancing max 1. ignore state symbols do not accept $Ca_2H_2O_2$	2
	c)	i)	any two from: produces (smaller molecules) with more demand or more useful/uses (fractions) with less demand or less useful; produces alkenes/(molecules) with double bond/allows (saturated) to become unsaturated; produces starting materials for polymers/plastics/produces monomers/ petrol;	2
		ii)	speed up reaction/lower temperature can be used/less energy needed/lowers activation energy/higher yield of branched and cyclic alkanes;	1
		iii) iv)	none/not used up in the reaction/can be recovered; (ignore does not react) bromine (water);	1
		,	colour removed; not goes clear or discoloured	2

Total 12 marks

4 any two from:

increasing temperature increases rate of reaction/chemical reaction faster at higher temperatures;

with faster reaction/increased rate light produced faster/more light produced;

chemical reaction when particles collide;

increased temperature gives increased frequency of collisions/ more collisions;

increased temperature gives increased energy of collisions/more successful collisions/more collisions or particles with energy greater than activation energy;

**plus** faster reaction so chemicals/reactants used up faster/reaction is over faster;

Total 3 marks

**TOTAL FOR PAPER 30 MARKS**