

# 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 meaning 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 bold, 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
			<b>Total 3 marks</b>
2	a)	correct structure; C <sub>3</sub> H <sub>8</sub>	2
	b)	carbon; hydrogen; (any order) or symbols - not carbon dioxide	2
	c)	oxygen; not O <sub>2</sub>	1
			<b>Total 5 marks</b>
3	a)	i) 7; accept group 7	1
		ii) electrons;	1
	b)	i) (chlorine is a) <u>bleach</u> ; not with wrong reason, (ignore colour removed)	1
		ii) (iodine is an) antiseptic/kills or removes germs or bacteria or microbes/prevents or stops infection; (ignore heal)	1
	c)	2 electrons in the only shell; accept Xs, circles etc. 2 protons in nucleus labelled; not on first circle 2 neutrons in nucleus labelled; If p and n marks not given allow 1 mark if clearly in centre	3
			<b>Total 7 marks</b>
4/2	a)	fractional distillation; accept fractionation not fractionation column	1
	b)	i) contains large(r) molecules/more(carbon)atoms/longer chains/heavier molecules;	1
		ii) 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; made from plants/made from renewable resources/does not use up crude oil; plus 1 communication mark for ensuring that spelling, punctuation and grammar are accurate, so that the meaning is clear; (If clear bullet points then just reasonable spelling)	3
			<b>Total 7 marks</b>
5/1	a)	17; liquid;	2
	b)	i) chlorine more reactive (than bromine); ORA bromine <u>displaced/displacement</u> (reaction); ignore equations	2
		ii) too or more reactive/not much available/would also displace chlorine;	1
	c)	2Na + Cl <sub>2</sub> → 2NaCl correct reactants; correct product; fully correct and balanced;	3
			Accept 2NaCl reversed ie 2ClNa. Ignore state symbols or energy references.
			<b>Total 8 marks</b>

3	a)	thermal; decomposition;	2
	b)	i) any two from: water absorbed/disappears; quick lime cracks/crumbles/swells/expands/forms powder; steam;	2
		ii) $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2$ reactants; product; incorrect balancing max 1. ignore state symbols do not accept $\text{Ca}_2\text{H}_2\text{O}_2$	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; none/not used up in the reaction/can be recovered; (ignore does not react)	1
		iii) bromine (water); iv) colour removed; not goes clear or discoloured	1 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; <b>plus</b> faster reaction so chemicals/reactants used up faster/reaction is over faster;	3
---	---	---

**Total 3 marks**

**TOTAL FOR PAPER 30 MARKS**