

Mark Scheme (Results)

Summer 2007

GCSE

GCSE Science B (1B/5627, 1B/5657, 4B/5628,
4B/5658)

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.

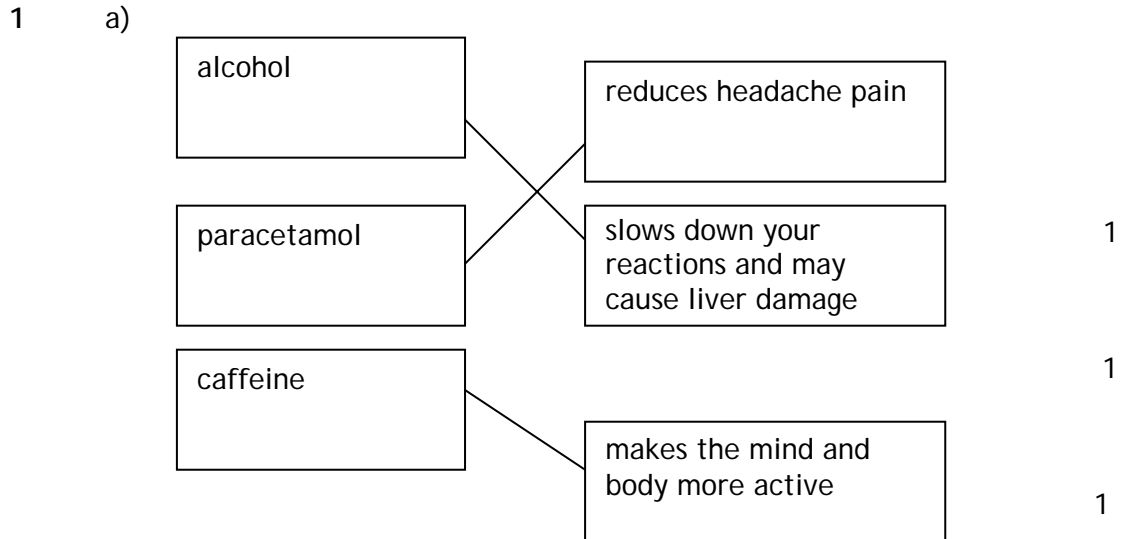
QUALITY OF WRITTEN COMMUNICATION

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 mark for each correct line. If more than 1 line is drawn from any one 'drug' box, do not award that mark.

- b) reduce pain; 1
 Accept any suitable indication of correct answer.
- Total 4 marks**

- 2
- a) plasma; 1
 b) soluble; 1
 c) red; 1
 d) clot; 1
 Accept close/phonetically correct spellings
- Total 4 marks**

- 3
- a) Sperm/spermatozoon/male gamete **AND** 1
 ova/ovum/egg(cell)/female gamete (requires one word from each list. Either order);
- b) XX; 1
- c i) G, G, T, in the correct boxes 2
 all three correct - 2marks; 1 or 2 correct - 1mark;
- ii) third base pair/middle base pair has changed/an A-T has 1
 become a G-C;
 (the answer must indicate position/which pair/order change)
 ignore DNA/it has changed
- iii) Mutation. accept deletion, addition, translocation, insertion, 1
 inversion, substitution;
- Total 6 marks**

4/2	a)	as pH falls/becomes more acidic the height gets less ORA; ignore references to more alkaline or volume of acid any correct manipulation of figures - eg 5.5. - 4.5 = ½ height/6.5 - 5.5 less effect than 5.5 - 4.5;	1 1
	b)	sulphur dioxide/SO ₂ /nitrous oxides/NO _x /N ₂ O ₃ /carbon dioxide/CO ₂ ; reject carbon monoxide /CO ignore references to named acids	1
	c)	(plantains have) larger surface area/leaves (to catch acid rain) / (acid) rain stays in contact longer (with plantain) ORA ignore references to flowers	1

Total 4 marks

5/1	a)	mouth/small intestine accept salivary gland / pancreas; correctly labelled;	1 1
	b)	sugar already present in potato/enzyme/apparatus; ignore references to fair test/repeat experiment	1
	c) i)	C grade standard line of best fit;	1
	ii)	Two from increases; levels off 200 - 300; credit correctly manipulated figures; (accept numbers from candidate's graph/Y-axis.)	2
	iii)	absorbed; ignore re-absorbed (accept diffuse/active transport) through (int.)wall/villi/ into blood/capillaries	1 1

Total 8 marks

6/3	a)	a map/plan/sequence/order of the genes/bases/DNA /chromosomes;	1
	b)	any 2 from or 1 fully explained: gene therapy; improved diagnosis of disease; rational/designer drugs; DNA forensics; assess health risks; organ donor matching; increase knowledge of eg evolution/inheritance; designer babies; paternity; genetic counselling; Accept other correct benefits QWC - present relevant information in a form that suits its purpose	2 1

Total 4 marks

4	a)	X chromosome in sperm; X chromosome in ovum; accept diagrams if above clearly shown award one mark for an answer re females inheriting XX	2
	b) i)	all A (to Ts) correct	1

b) ii) all G (to Cs) correct 1
 any three from
 Creates free radicals/changes charges on molecules;
 mutation;
 Change in structure of DNA/ example eg base change;
 more likely to occur;
 during (DNA) replication;
 credit suitable consequence eg wrong protein made;
 Credit correctly named specific genetic condition e.g. sickle cell anaemia. 3

Total 7 marks

5 a) X on synapse; 1
 b) Two from
 relieve pain;
 for terminally ill/patients in so much pain;
 explanation e.g. when the pain relief outweighs the dangers
 of heroin/terminally ill so heroin addiction/effects of heroin
 of less importance; 2

Total 3 marks

6 Any 4 from
 as temperature increase more water lost through sweat;
 blood more concentrated/body dehydrated;
 detected by hypothalamus/osmoreceptors;
 ADH;
 (Released) from pituitary gland;
 makes collecting duct/collecting tubule more permeable;
 so more water reabsorbed (into blood)/back into body/less
 water is excreted/urine more concentrated; 4
 Maximum of two marks if answer relates to producing dilute
 urine.

Total 4 marks

TOTAL FOR PAPER: 30 MARKS