

Mark Scheme (Results)

Summer 2007

GCSE

GCSE Science B (2B/5627, 2B/5667, 5B/5628,
5B/5668)

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 | Cytoplasm; nucleus; (Ignore descriptions like cell/plasma/thin) membrane; | 3 |
| Total 3 marks | | |
| 2 | a) Will decay = bread, apple, wood (any order) Will not decay = glass, stone (any order) All five correct = 2 marks 1 error = 1 mark; 2 errors = 0 marks | 2 |
| | b) i) increases; | 1 |
| | ii) increases; | 1 |
| | iii) stops; | 1 |
| Total 5 marks | | |
| 3 | a) i) correct line to an alveolus (name not required) ignore other labels unless they contradict correct one. | 1 |
| | ii) 4 -2 - 1 - 3 | 1 |
| | b) any two from: use nicotine patches/gum/lozenge; herbal remedies/cigarettes; don't go where 'smoking' occurs; acupuncture/hypnosis/support group/tapes; eating sweets/licuorice/chewing gum; occupying hands/chewing pencil/find something else to do/eqv; work out how much money you will save; cut down gradually; | 2 |
| Total 4 marks | | |
| 4 | a) highest = 890 to 900 | 1 |
| | b) day 8 or 9; | 1 |
| | c) predators; | 1 |
| | biological; | 1 |
| Total 4 marks | | |

- 5/1
- a) narrowing / lumen smaller/ build up on inside (of artery) / atheroma / arteriosclerosis /Atherosclerosis /less flexibility/less elasticity /accept arteries clogged up reject arteries blocked. ignore cholesterol/fat/LDL/HDL 1
- b) i) two from:
 SUGGESTION - less fat/saturated fats/cholesterol/chocolate/fried food/more good oils/omega 3 oils/fruit/veg/oats/unsaturated fats etc. in diet;
 REASON - reduces the build up in artery/increases lumen/blood flow/reduces cholesterol uptake/stops more fat from building up;
 OR
 SUGGESTION - reduce salt intake;
 REASON - reduces hypertension so less risk of atheroma/heart attack/reduces blood pressure; 2
- ii) two from:
 (exercise) improves blood flow/oxygen supply to the heart (muscle)/coronary arteries;
 strengthens heart (muscle);
 credit valid comments re why a walk/not too much exercise;
 Lose weight/burn excess fat/
 Less fat/cholesterol deposited;
 Less heart strain/relieves stress/reduces blood pressure; 2
- Total 5 marks**

- 6/2
- a) i) + water \longrightarrow oxygen + ; (accept any correct phonetic/reasonable spelling) 1
- ii) respiration (ignore breathing) is producing it/combustion/burning (fossil fuels)decomposition/car exhausts/; 1
- b) Any three from:
 Cellulose;
 which is used in cell walls;
 Starch; which is stored/converted back to glucose when needed (linked to starch) ;
 Sucrose; which is transported in phloem (linked to sucrose);
 Protein; which is used for enzymes/structures (linked to protein);
 Wax; which is used for waterproofing (linked to wax);
 Lipids/fat/oil; which is used for membranes/ energy (linked to lipids/fat/oil);
 credit answers involving food chains/eaten by herbivores; 3
 Chlorophyll; for photosynthesis/to absorb light (linked to chlorophyll);
- Total 5 marks**

7/3

Any three from:

Has an oxygen debt;

needs extra oxygen ;

to oxidise/process lactic acid;

(from) anaerobic respiration;

(broken down, mainly) in liver;

eventually heavy breathing stops when oxygen debt

repaid;

3+1

QWC: ensure that spelling, punctuation and grammar are accurate, so that the meaning is clear;

Total 4 marks

- 4
- a) Phloem ; (accept any correct phonetic/reasonable spelling) 1
 - b) sucrose/sugar(reject glucose)/amino acids/Plant growth substances/named plant growth substances; (accept any correct phonetic/reasonable spelling) 1
 - c) hollow/dead/lignified/has lignin(rings/wall)/strong (so don't collapse)/narrow(-capillary action); (accept any correct phonetic/reasonable spelling) 1
 - d) i) hotter;
so faster **transpiration/evaporation/rate of diffusion**
ORA;
OR
more light/not in shade;
so stomata open more/ ORA;
OR
More windy/exposed;
so faster **transpiration/evaporation/rate of diffusion**
ORA; 2
 - ii) Two from:
plant losing too much water/wilting/cells are flaccid;
qualified reduced light intensity/increased
humidity/reduced temperature;
stomata closing/closed; 2

Total 7 marks

- 5
- a) Predators/animals/plants living things/organisms of the pest/slug; 1
used to keep numbers down; 1
 - b) Advantage: 1
species specific/doesn't kill other wildlife/doesn't kill bees/useful insects/doesn't pollute environment/children /pet/plant safe/won't get chemicals on human food/won't get bioaccumulation;
 - Disadvantage: 1
Only kills one sort of pest/ often dies out over winter/slow to respond to surge in pest numbers/control organism may become a bigger problem than pest/may cause other named problem/can only be used at certain times of year;

Total 4 marks

- 6
- a) must have got 'r' from A (as A is homozygous recessive); 1
must have at least 1 R as D is a sufferer; 1
NB credit genetic diagrams if above clearly shown / answers may be on pedigree
 - b) $\frac{3}{4}$ /0.75/3 in 4/75%, 3:1; 1
 - c) 2 **justified** ethical/moral reasons
 - i) e.g. it is wrong to allow someone to be born when you know that they are going to suffer a lot;
 - ii) e.g. who are we to decide who is going to enjoy life/it will only affect them in later life/If religious argument used it must be qualified; 2

Total 5 marks

TOTAL FOR PAPER: 30 MARKS