

Mark Scheme (Results) Summer 2007

GCSE

GCSE Science (1522/1F)

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 mark awarded for part of a question should be written in the margin close to the sub-total.
2. The sub-total marks for a question should be added together and the total written and ringed at the end of the question 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

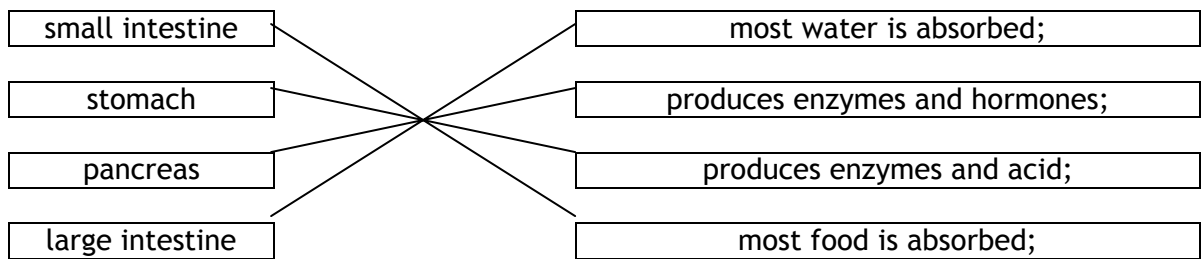
use a suitable structure and style of writing.



1. (a) (i) cytoplasm; 3
(ii) (cell) membrane; 1
(iii) nucleus; 1
(b) red blood cell; 1
(c) sperm (cell) / egg (cell) / gamete / sex cell; 1

Total 5 marks

2.



- 3 or 4 correctly linked - 3 marks
2 only correctly linked - 2 marks
1 only correctly linked - 1 mark

3

Total 3 marks

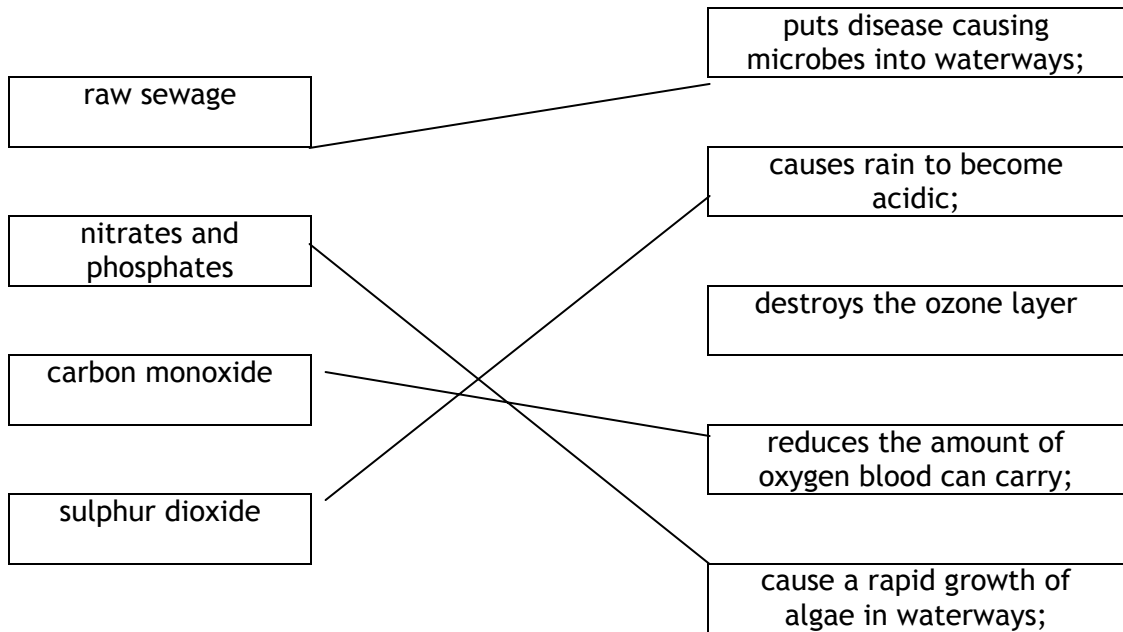
3. (a) (i) F; 1
(ii) C / liver; 1
(iii) B / gall bladder; 1
(b) emulsifying fats / neutralise (stomach) acid; 1
[Reject digests fat]
(c) (i) villus / villi; 1
(ii) A description to include any two from:
1. increase surface area;
2. lots of capillaries / stroke / large blood supply;
3. one cell thick / thin wall; 2

Total 7 marks

4.

pollutant

possible effect



Total 4 marks

5.

- (a) nucleus; 1
- (b) (i) gametes; 1
- (ii) fertilisation; 1
- (iii) 46; 1
- (iv) 7 cells; 1

Total 5 marks

6.

- (a) carbon dioxide + water; oxygen + glucose; [Accept correct symbols] 2
- (b) no / less pollution/eutrophication / reduces number of algae in rivers; 1
- (c) (i) renewable energy resource; 1
- (ii) Any two from:
1. burning produces carbon dioxide;
2. photosynthesis absorbs carbon dioxide;
3. the amount produced equals the amount absorbed; 2

Total 6 marks

7. (a) X heart;
Y alveolus;
Z bronchiole; 3
- (b) (i) contract; 1
- (ii) raised/ move up and out; 1
- (iii) contracts/flattens; 1
- (c) (i) increases; 1
- (ii) decreases; 1

Total 8 Marks

8. (a) osmosis; 1
- (b) 17 ± 1 ; 1
- (c) (i) 5; 1
- (ii) liquid would add to mass; 1
- (d) An explanation to include:
gain mass:
sugar solution less concentrated;
water enters cells;
- lose mass:
sugar solution more concentrated;
water leaves cells; 4
- (e) (i) floppy/wilted;
- (ii) osmosis;
- (iii) wilted; 3

Total 11 marks

9. (a) 5 / retina / rods / cones / rods and cones / fovea; 1
- (b) 5 / retina / fovea; 1
- (c) 1 and 7 / or any two of: cornea / lens / aqueous humour / vitreous humour / conjunctiva; 1
- (d) 2 / iris; 1

Total 14 marks

10. A description to include any six from:
1. (lung) / other relevant cancers;
 2. mutagens;
 3. emphysema / breathing difficulties;
 4. damage to alveoli;
 5. bronchitis / pneumonia;
 6. affect on cilia;
 7. addiction / hard to quit;
 8. reduced oxygen carriage;
 9. reduced birth weight;
 10. reference to cough / smokers cough;
 11. **increased** mucus secretion;
 12. reduced gaseous exchange;
 13. effect on circulation / heart stroke / heart attack / affected narrowing of arteries;
 14. increased blood pressure; 6
 15. reduced sperm count; 1

plus one communication mark for ensuring that spelling, punctuation and grammar are accurate, so that the meaning is clear.

Total 7 marks

11. (a) axes plotted correct way around;
plotting correctly (lose 1 per error) ;; [less than a square]
smooth curve; 4
- (b) 40.5 ± 1 ; 1
- (c) An explanation to include any six from:
1. at first as carbon dioxide increases photosynthesis increases;
 2. between 0 and 1.0 - increase in photosynthesis;
 3. rate slows down (0.6 and 1);
 4. stays constant (after levelling off) / no change / stop rising;
 5. rate limited by some other factor;
 6. limiting factor;
 7. example eg light / water / temperature;
 8. saturation carbon dioxide; 5

plus one communication mark for presenting relevant information in a form that suits its purpose (logical sequence) 1

Total 11 marks

12. (a) testosterone;
- (b) growth of pubic / auxiliary hair / development of genitalia;
- (c) (i) A descriptions to include:
1. (FSH) - causes ovary to produce an ovum / to produce oestrogen / graafia follicles;
 2. (LH) - causes ovulation / ovary to produce progesterone / corpus luteun;
 3. oestrogen - causes rebuilding of uterine lining / prevents ovary from producing an ovum / causes pituitary to produce LH / inhibits FSH at low levels / ORA;
 4. progesterone - maintains uterine lining / prevents FSH / LH production;
- (ii) FSH and LH;

4

1

Total 7 marks

13. (a) pancreas;
- (b) (i) lipase;
- (ii) fatty acids and glycerol;
- (c) (i) 40;
- (ii) (fatty) acids are formed / increased acidity; [Ignore amino] these lower the pH (to less than 5);
- (iii) A suggestion to include five from:
1. tube originally at 10 °C / tube 1 yellow;
 2. enzyme not destroyed at low temperatures;
 3. higher temperature raises rate of reaction / ORA;
 4. reference to collisions;
 5. reference to (activation) energy;
 6. tube originally at 70 °C / tube 7 no change / remains blue;
 7. no reaction (at 40 °C) / no acids produced;
 8. enzyme destroyed / denatured at high temperature / enzyme does not work;
 9. reference to optimum temperature / 40 °C;
 10. enzyme not reactivated / start working again;
- plus one communication mark for using a suitable structure and style of writing

1

1

1

1

2

5

1

Total 12 marks

TOTAL MARK 90