

Mark Scheme (Results)

November 2010

GCSE

360Science

GCSE Additional Science
Structured Paper B2 (5016H/1H)

GCSE Biology
Structured Paper B2 (5028H/1H)

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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. Suggestion/explanation questions should be marked correct even when the suggestion is contained within the explanation.
2. **Do not** award marks for repetition of the stem of the question.
3. 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.

Question number	Answer	Additional guidance	Mark
1	<p>One mark for increasing a named factor and 1 mark for explaining how this will increase growth. Examples:</p> <p>(a) (increase) supply of nutrients/minerals / named mineral;</p> <p>(b) (can make)more proteins / chlorophyll ;</p> <p>OR</p> <p>(a) (increased) water ;</p> <p>(b) increases (rate of) photosynthesis / makes glucose / turgidity / uptake / get more minerals / nutrients ;</p> <p>OR</p> <p>(a) (optimum /best) temperature;</p> <p>(b) enzymes work most efficiently/ rate of photosynthesis / chemical reactions increase;</p> <p>OR</p> <p>(a) (increase)level/amount of carbon dioxide</p> <p>(b) increase (rate of) photosynthesis / glucose produced;</p> <p>OR</p> <p>(a) add plant hormones / auxins ;</p> <p>(b) increase cell/root/shoot growth</p> <p>OR</p> <p>(a) put in a bigger pot</p> <p>(b) more space for root growth/more soil to supply nutrients</p>	<p>Mark for b) is dependant on a)</p> <p>Accept: (increase) fertiliser</p> <p>Reject: if temperature suggested is so high/too cold that it would damage the plant</p> <p>burn wood to produce more carbon dioxide ;</p>	(2)

Question number	Answer	Additional guidance	Mark
2(a)	Standard line of best fit - ruler straight with even distribution of points ;	At least one dot on each side and line clearly follows trend of plotted points.	(1)

Question number	Answer	Additional guidance	Mark
2(b)	1325 to 1400 (bird species);		(1)

Question number	Answer	Additional guidance	Mark
2(c)	<p>Any two from:</p> <ol style="list-style-type: none"> 1. increase / maintain the number / creates new/type of habitats ; 2. increased amount of food available / more types of producers / idea of larger food web ; 3. makes more difficult to be hunted / more camouflage more place to hide or shelter from predators; 4. increased number of nesting/ breeding sites ; 	<p>ignore - homes</p> <p>Ignore refs to less competition/ increased biodiversity unless qualified</p> <p>Ignore more reproduction</p> <p>ignore: more O₂ produced / CO₂ absorbed.</p>	(2)

Question number	Answer	Additional guidance	Mark
3(a)	<ol style="list-style-type: none"> 1. by pairs of bases/four bases / A,T,C,G/ Adenine, Thymine, Cytosine, Guanine; 2. four bases correctly paired A with T and C with G ; 	<p>Reject U / uracil</p> <p>Credit hydrogen bonds (between bases) ;</p>	(2)

Question number	Answer	Additional guidance	Mark
3(b)	<p>Any two from:</p> <ol style="list-style-type: none"> 1. contain different <u>amino acids</u> ; 2. <u>amino acids</u> assemble in different order ; 3. proteins have different jobs /functions ; 	<p>Ignore structure as it is in the stem of the question</p> <p>Ignore refs to length / number of amino acids</p> <p>Reject answers that confuse bases with amino acid.</p>	(2)

Question number	Answer	Additional guidance	Mark
7	<p>Any four from:</p> <ol style="list-style-type: none"> 1. DNA / chromosomes replicate ; 2. spindle / cell fibres form; 3. chromosomes arrange themselves on equator / at centre of cell / attach to spindle; 4. (spindle) pulls chromosomes / chromatids apart / chromosomes move to poles ; 5. cytokinesis / nuclear membrane forms around chromosomes; 6. makes two (diploid daughter) cells that are genetically identical; 	<p>Ignore cell / nucleus splits/divides</p> <p>Deduct one mark for each reference to meiosis</p> <p>Credit diagrams if clear / annotated</p> <p>Maximum of 2 marks if order is confused</p>	(4)

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