

Examiners' Report/ Principal Examiner Feedback

March 2010

GCSE

360Science

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

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

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5016H Additional Science/ 5028H Biology (Structured B2) Examiners' Report

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General Comments

All items seemed accessible to the majority of candidates although there was evidence of some questions being left blank and a significant number of candidates wrote vague responses that gained no marks.

There were some candidates that wrote long answers. Candidates may benefit from practise at making their responses more concise. There was less evidence in this series of good practice such as underlying key words in the question to help focus minds on the key points.

Statistics quoted are for an average of both 5016H and 5028H.

Question 1. Competition

a) This question was generally well answered with 77% gaining the mark. Good answers incorporated the terms "increase and decrease" or mentioned a peak at "15m". Poor answers commonly quoted numbers but did not describe the distribution and did not gain credit

b) This question was less well answered with 48% gaining the mark. Many candidates thought the rocky shore began at the top of the shore and so incorporated this into their answer as a reason. "Too far from the sea" was also a common answer, without giving a reason. Some candidates were confused between the purple and grey topshells. Others thought the distances were water depths.

c) 35% of candidates gained both marks, and 55% gained only one mark for this question. Most candidates understood the idea that one species was taking food or room and a few clearly understood the concept of competition. The ideas of competition, competing or adaptation were not used in many answers.

Question 2. Cell division

20% of candidates scored one mark here with 28% and 33% scoring two and three marks respectively.

This question was generally very well answered. The majority of candidates knew the details of mitosis. Elongation was not used in many answers. Weaker answers confused mitosis and meiosis.

Question 3. Extreme environments

a) 66% of candidates correctly answered this question. Most candidates referred to high pressure or lack of light. Answers which did not gain credit mentioned "pressure" without qualifying it, or related to high pressure water spouting from the vent. Others stated "no food" and "poor visibility, so can't catch food"

b) Only 20% of candidates gained both marks for this question, and 18% gained one mark. Most candidates did not link the adaptation to the explanation, and few really understood what the adaptations might be. Few seem to realise that pressure increases with depth and the luminous spots and appendages are not really used for vision but to attract prey.

Question 4. Growing tomatoes in a greenhouse

a) 80% of candidates scored the mark here. Marks were gained by mentioning some form of control or keeping the heat in. Some candidates confused the question with the Greenhouse Effect. A fair number had unusual ideas concerning greenhouses attracting, magnifying, amplifying, reflecting or trapping light/sunlight, or referred to protection from the weather.

b) Candidates do seem to struggle with aspects of the nitrogen cycle. Only 10% gained both marks and 10% gained one mark. There was confusion over nitrifying, denitrifying and nitrogen fixing bacteria. There was little or no mention of nitrite ions and very few candidates knew that proteins broke down into ammonia or ammonium ions.

bii) Generally candidates did not know that plants used nitrates from the soil and that compost contains nitrates. It was known that plants need nitrates to grow or make protein. Improve soil structure was not given as an answer. Only 15% gained both marks and 40% gained one mark.

Question 5. Meiosis

a) 54% of candidates gained one mark as they drew chromosomes only in the nucleus, but only 25% went on to gain the second mark because they did not draw one long and one short chromosome showing the reduction in chromosome number.

b) Only 26% of candidates gained both marks for this question, and 25% gained one mark. Most marks were lost by candidates not realising that they had to give both sides of the argument - for example, that mitosis produces 2 cells and meiosis does not was awarded no marks, they had to say it resulted in 4 cells.

Question 6. Respiration during exercise

a) Candidates found this a very difficult question to answer. Only 7% of candidates gained both marks and 39% gained one mark. The one mark was for realising that exercising or increased muscle activity was taking place. Many responses reflected incorrectly the idea that oxygen fell as a result of anaerobic respiration. Candidates often referred to oxygen debt, not answering what the question asked. Other misconceptions were that lactic acid prevents oxygen uptake and that muscles provide oxygen. The graph was often interpreted as oxygen used, instead of concentration of oxygen in muscle.

b) There were many misconceptions here with oxygen debt was the most common answer. The chemistry of the break down of lactic acid was not known and very few candidates mentioned diffusion of lactic acid from muscle to blood and then taken to the liver. Only 1% of candidates gained all three marks, 9% gained two and 25% gained one mark. Some

knew that lactic acid is broken down into carbon dioxide and water., and a few that this breakdown used oxygen.

Question 7. Fruit in your diet

a) Many answers made vague references to vitamins and minerals, although many knew that these are important for a balanced diet. Many candidates referred to 'nutrients' rather than vitamins or minerals. Only 4% of candidates gained both marks and 35% gained one mark. The idea of an amount of vitamins/minerals required was frequently not clearly expressed. Appropriate deficiency diseases were rarely mentioned correctly.

b) This question gave candidates the opportunity to express themselves more fully. Many gave confused responses referring to genetic modification/selective breeding/GM crops. Many candidates confused the hormones with being genes or fertilisers. There were many references to hormones being 'injected' into plants rather than sprayed on them. Many candidates knew that hormones had something to do with the formation of 'seedless fruit' but couldn't explain why. A few candidates confused ethene with ethane. Only 4% of candidates gained all four marks, 4% gained three, 10% gained two marks and 23% gained one mark.

Grade Boundaries - March 2010

Multiple Choice Papers - GCSE Additional Science

Raw Mark Grade Boundaries

5015/5027	Max mark	A*	A	B	C	D	E	F	G
H	24	20	18	15	13	10	8		
F	24				16	13	11	9	7

5017/5037	Max mark	A*	A	B	C	D	E	F	G
H	24	17	15	12	10	7	5		
F	24				15	12	10	8	6

5019/5047	Max mark	A*	A	B	C	D	E	F	G
H	24	15	13	11	9	6	4		
F	24				16	13	10	8	6

Uniform Mark Grade Boundaries for these units

	Max UMS	A*	A	B	C	D	E	F	G
H	40	36	32	28	24	20	18		
F	27				24	20	16	12	8

Note: On higher tier papers, the "allowed" grade E is calculated as half a grade width

Structured Papers - GCSE Additional Science

Raw Mark Grade Boundaries

5016/5028	Max mark	A*	A	B	C	D	E	F	G
H	30	17	14	11	9	7	6		
F	30				18	15	12	10	8

5018/5038	Max mark	A*	A	B	C	D	E	F	G
H	30	21	17	13	10	7	5		
F	30				22	18	15	12	9

5020/5048	Max mark	A*	A	B	C	D	E	F	G
H	30	21	19	16	14	11	9		
F	30				20	16	12	9	6

Uniform Mark Grade Boundaries for these units

	Max UMS	A*	A	B	C	D	E	F	G
H	40	36	32	28	24	20	18		
F	27				24	20	16	12	8

Note: On higher tier papers, the "allowed" grade E is calculated as half a grade width

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