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# Examiners' Report / Principal Examiner Feedback

## Summer 2010

IGCSE

## IGCSE Biology (4325) Paper 2H

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**4325 Paper 2H Biology Report – Summer 2010**

The examination was taken by many more candidates than the November series. As for last year, the examiners were impressed by the quality of answers provided by the majority of candidates. Candidates were able to show high levels of knowledge and understanding and the ability to apply their knowledge to new situations. We would like to thank centres for preparing candidates so carefully for the IGCSE examinations over the last 8 years and look forward to examining future candidates on the new revised specification from June 2011.
This year quite a number of candidates were unable to answer some of the longer items in the spaces provided on the question paper. The number of lines provided for each item is intended to indicate the length of response required. We advise candidates to spend more time thinking about and composing their response and less time writing at great length.

Questions 1-7 also appeared on the foundation level paper.

**Question 1**

This question required candidates to complete a table by writing the correct type of organism chosen from the list provided. Given that this was supposed to be an easy introduction to the paper a surprising number of candidates failed to score full marks.

**Question 2**

This question gave candidates a photograph of a field of sunflowers. In part (a) most could describe insect pollination as the transfer of pollen from the anther of one flower to the stigma of another. In part (b) almost all responses correctly identified the behaviour of sunflowers as a example of positive phototropism. Most candidates then suggested the advantage of the response of the flower in terms of absorbing extra sunlight for photosynthesis which we credited. Only the very best candidates linked the response to the flower head itself absorbing heat to increase enzyme activity for seed growth or reflecting more light to attract insects for pollination. In part (c) almost all candidates could correctly describe the response of stems and roots to gravity. A few candidates wrote about roots response to light and stems growing into the ground.

**Question 3**

This question showed a diagram of a white blood cell ingesting a bacterium. In part (a) candidates were required to name the cell membrane, cytoplasm and nucleus and give their functions. Candidates generally did well on this item. The next part, however, was less well done with some responses about killing or destroying the bacterium. The best answers clearly stated digestion by enzymes. Part (b) was well answered by most candidates describing antibody production by lymphocytes.

**Question 4**

This item required candidates to complete a table showing the organ affected by some human conditions. Again most responses earned full credit with the most common errors being penis for infertility or stomach for poor food absorption.

**Question 5**

This showed a diagram of the carbon cycle and in part (a) candidates had to identify photosynthesis and name the processes that convert carbon in animals into carbon dioxide in the air. Most could do this with a small number suggesting combustion or breathing as answers. Part (b) was the first longer response question requiring candidates to describe the possible consequences of too much carbon dioxide in the air. Many responses earned full credit but some candidates wrote at length about respiration, acid rain and photosynthesis. The many credit worthy responses are given in the mark scheme.

**Question 6**

Part (a) required an explanation of how weeds could reduce crop yield. Most candidates could give a clear explanation of how weeds compete for water, mineral ions and sunlight and described how weeds could, for example, be pulled up or killed with a herbicide. In part (b) some candidates failed to earn full marks by describing feeding on leaves rather than clearly stating that leaf surface area would be destroyed or lost leading to less absorption of sunlight and therefore less photosynthesis. Most could give two ways that farmers could get rid of insects.

**Question 7**

Part (a) was a straight forward genetics question and most candidates earned full marks. Those candidates who failed to earn full credit had missed out the gametes from the cross going straight from parent genotypes to offspring genotypes. In part (b) candidates were expected to calculate and state the number of albino offspring produced from each cross. Some candidates failed to read the question carefully and expressed their answers as fractions or as percentages. Most high level candidates were able to suggest that albino mice would have a selective disadvantage due to lack of camouflage and be vulnerable to predators in the wild.

**Question 8**

This question gave students two photographs showing a normal female karyotype and a karyotype of an individual with Turner's syndrome. In part (a) most could say how many chromosomes were shown but not all could give the sex of the person with a reason. Some candidates had obviously never seen a karyotype and thought that all the chromosomes were Xs or that the first pair determined the gender. Candidates fared better in part (b) and most could describe that the karyotype shown lacked one chromosome from pair 23. However only the very best candidates could clearly state that the individual had no Y chromosome so could not be male.

**Question 9**

This question required candidates to write what is meant by the terms 'population' and 'community'. Most could describe population as a group of organisms but not all responses referred to 'of the same species'. In part (b) some candidates could describe the effects of deforestation on the woodland in terms of soil erosion and habitat destruction but others wrote at length about global warming, climate change etc. In (c) the best responses described how tissue culture could quickly produce many genetically identical organisms. Other responses mentioned how it could be used when it is difficult to obtain seed and that the plants can be grown at any time of year.

**Question 10**

This question was about fish farming and in (a) candidates were usually able to give three advantages of farming fish over catching fish from the wild. Popular answers included control over the water quality in terms of its oxygen content, control over the species of fish famed and control of the fish diet. Other credit worthy responses included guaranteed harvest and control of predation and disease and no depletion of wild fish stocks. Part (b) asked candidates to describe the disadvantages to the local environment and organisms of release of organic waste and of escape of farmed fish. The candidate responses to release of organic waste of algal growth, bacterial decomposition and reduction in available oxygen were much better than the responses to escape of farmed fish. Only the best answers included competition for food sources, predation of wild fish, interbreeding and possible spread of diseases.

**Question 11**

This item required candidates to write about the changes in the skin when a person moves from a cold room and enters a warm room. While many candidates earned 5 or 6 marks some wasted time by describing the physiological changes in a cold room and then those in a warm room. Some candidates still describe the movement of blood vessels rather than the diversion of blood through superficial capillaries due to dilation of arterioles.

**Question 12**

This question showed a drawing of an *Amoeba* and asked candidates in part (a) to explain the term unicellular and in part (b) to explain why it does not need a transport system. Almost all could explain the term unicellular but not all could explain why an *Amoeba* does not require a transport system due to its small size and large surface area to volume ration enabling efficient diffusion. Most were also able to complete a table to show the movement of substances around the body, filling in the substance, where they enter the blood and how they are carried. Some weaker candidates wrote stomach for where glucose enters the blood and kidney for where urea enters the blood.

**Question 13**

This question gave students a food chain from Asia in (a) and most could identify the secondary consumer and top carnivore. In (b) it showed a food chain with sugar cane, scarab beetles and cane toads from Australia. Most candidates could suggest why cane toads were released by farmers and some could suggest the problems caused by their release such as increase in numbers and eating other organisms

**Question 14**

This showed a diagram of the kidney and associated structures. In (a) candidates could usually identify the system as the excretory or urinary or urinogenital. However many candidates could not name the urethra, ureter and bladder labelled in the diagram. In part (b) candidates sometimes wrote sperm rather than semen and urea rather than urine as the liquids likely to pass down tube A. In (c) many gained full marks for suggesting that some people are unwilling to donate a kidney and that some organs will be rejected by the recipient's immune system.

**Question 15**

This gave candidates a table containing the names, sources and functions of some components of a balanced diet. Most candidates were able to complete the table with many gaining full marks. A common error was to write vitamins rather than specifying vitamin C to maintain healthy gums and prevent scurvy. Part (b) was very disappointing with many candidates being unable to give the elements present in lipid. The most common wrong answer was fatty acids and glycerol. Clearly candidates in some centres had not been taught the elements. They did better at describing how lipid is digested in the gut with most securing 3 marks for describing the role of bile in emulsifying lipid and lipase in digesting it to fatty acids and glycerol.

**Question 16**

This required candidates to complete a table to show how gas exchange would change in a leaf depending upon the levels of illumination. Only the best candidates earned full credit.

**Question 17**

This gave candidates a diagram showing the human digestive system divided into four sections. Most could correctly identify the sections where the gut contents had a pH of 2, where most villi are found and where egestion takes place. However candidates had difficulty stating that amylase is released in sections A and B (and C) and that peristalsis takes place in sections **A**, **B**, **C** and **D**. If candidates had read the question carefully, and noted 'state the **section** or **sections',** then more than a few candidates would have scored full 5 marks on this final question.

# BIOLOGY 4325, GRADE BOUNDARIES

Option 1: with Written Alternative to Coursework (Paper 3)

| | A* | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|
| Foundation Tier | | | | 67 | 54 | 41 | 28 | 15 |
| Higher Tier | 84 | 74 | 64 | 54 | 42 | 36 | | |

Option 2: with Coursework (Paper 04)

| | A* | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|
| Foundation Tier | | | | 68 | 54 | 40 | 27 | 14 |
| Higher Tier | 85 | 75 | 65 | 55 | 43 | 37 | | |

**Note:** Grade boundaries may vary from year to year and from subject to subject, depending on the demand of the question paper.

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