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Examiners' Report / Principal Examiner Feedback

Summer 2010

IGCSE

IGCSE Biology (4325) Paper 1F

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4325 Paper 1F Biology Report – Summer 2010

General

The paper was felt to be of a similar standard to those set previously. The candidates' performance appeared to be similar to that in previous series. The paper discriminated well, with a very wide range of marks seen. The full range of marks was seen for each part of each question.

Comments on individual questions

Question 1

The multiple choice questions were answered fairly well on the whole. Many candidates scored 7 marks or more. The questions that were answered less well were (h) where many were not aware of all the names of the greenhouse gases and (j) where some were unable to calculate the area of a quadrat, given the lengths of the sides.

Question 2

This question tested the candidates' knowledge and understanding of food chains.
(a) Most drew the lines corrects between the plants and insects, but not all knew that the direction of the arrow is towards the insects.
(b) Most candidates knew that the numbers would be decreased.
(c) Most could name the primary consumer as the insect. A few named the spider.
(d) Most knew that the energy source was the sun.

Question 3

This question tested the candidates' knowledge of the digestive system.
(a) This was well done, with most candidates knowing the location of the stomach, small intestine and the large intestine, where water is absorbed. Most knew that the gall bladder had association with bile, but few knew that it stores bile.
(b) Most candidates correctly chose fatty acids, but some thought that the end product of lipid digestion is amino acids.

Question 4

This question focused on photosynthesis. It was answered well. Almost all gained marks for carbon dioxide from the air, light energy from the sun and water from the soil. Not all got starch as the storage product (some put cellulose or glycogen) and not all put oxygen is released back in to the air (some put carbon dioxide).

Question 5

This question tested the candidates' understanding of respiration and the respiratory system.
(a) Most candidates could correctly identify the bronchiole. The most common wrong answer was the trachea.
(b) The majority of candidates could name the heart as the organ receiving blood. A significant number put the lungs.
(c) Many correctly wrote the word equation for respiration. The most common wrong answer was water needed instead of produced.
(d) This was answered well with over half gaining two marks. The main comments were that the alveoli were thin and had a large surface area. Many candidates commented on the closeness to capillaries. Fewer candidates mentioned that the alveoli are moist. Candidates who answered wrongly mainly described the mechanism of breathing and gas exchange, not the actual adaptations of the alveoli.

Question 6

This question was about selective breeding and micropropagation in plants.
(a) Not many candidates knew the terms selective breeding or artificial selection.
(b) Almost all candidates gained one mark for identifying the desired characteristics, although some were clearly a little confused by the question, as they wrote down all the features of both plants.
(c) Answers which gained marks generally had the idea that a part of the wheat plant was taken. However, the idea that these were planted directly into soil was very common. Few candidates mentioned explants. Many answers stated that the parts of the plant were dipped in rooting powder then planted in soil. Most knew advantages of micropropagation, the most common answers being it was quick and produced many plants. A large majority knew that a disadvantage was that if one gets a disease, then all will get it.

Question 7

This question tested the candidates' knowledge and understanding of the nervous system, in particular of the eye.
(a) Most candidates could identify that this was a neurone or equivalent.
(b) Most candidates correctly identified the brain. However, some gave spinal cord or another name for spinal cord, despite that part being given in the question and another the other part asked for. This suggests that some candidates are not reading the questions carefully enough.
(c) Most candidates could correctly identify the retina and the optic nerve. When describing what happens to ciliary muscles and the lens for close up vision, many identified correctly contraction for the ciliary muscles, but some then went onto contradict themselves in the same answer by also writing relax. For the lens response many pupils wrote thin, although many indicated that the lens would get fatter or the equivalent.
(d) Nearly all stated adrenaline but very rarely with the correct spelling. The others stated scared.

Question 8

This question tested candidates' knowledge of the control of blood sugar and also of the production of insulin commercially. Most knew that insulin was made in the pancreas and that its function was to lower blood glucose/sugar. Many knew that insulin could be made by genetically modifying bacteria, although some thought this to be fungi. Few candidates could name a fermenter or bioreactor as the large container for its production.

Question 9

This question tested the candidates' knowledge of the key features of different organisms.
Many could identify viruses from the features and also bacteria. Some were less sure of the identification of fungi, but most could identify animals. The most common organisms to get mixed up were bacteria and fungi.

Question 10

This question was based on plants and tested the candidates' knowledge and understanding of pollination, aspects of photosynthesis and hormone responses.
(a) Almost all candidates gained one mark for the idea of the transfer of pollen. In addition many also gained the second mark by correct reference to the stigma.
(b) Most could identify positive phototropism as the response to the sun.
(c) Most candidates gained around two marks, but in a variety of ways. Some correctly identified negative geotropism and positive geotropism or gave a description of each. Others identified why the responses were necessary, e.g. of the stems to gain light or of the roots to gain water. Candidates tended to answer the question better with respect to the roots than to the stem.

Question 11

This question was tested candidates' knowledge of cell structure and also of the function of different types of white blood cells.
(a) The majority of the candidates named the parts of the cell correctly. The main incorrect answer was naming the cell membrane as the cell wall. The descriptions of the functions of the parts were answered well. Frequently the nucleus was called the brain of the cell. There was a lot of confusion between the roles of phagocytes and lymphocytes. Their knowledge overlapped and often stated role of phagocyte but then would go onto discuss antibodies. Many, however, gained the first mark for breakdown or digestion, but few mentioned the involvement of enzymes.
(b) As in (a) there was confusion about phagocytes and lymphocytes. Only the better candidates could name lymphocytes as another type of white blood cell. Some did recognise that antibodies were produced. Other responses in the mark scheme were rarely given.

Question 12

This question was about the names of human and conditions and the relevant organs involved. It was answered well on the whole. However, some candidates stated alveoli instead of lungs, lens for the eye, stomach for small intestine, and male reproductive organ, penis and scrotum instead of testes.

Question 13

This question was about the carbon cycle.
(a) Most candidates were able to identify the letter representing photosynthesis. In addition, most could also identify two processes that produced carbon dioxide, particularly respiration.
(b) There was much confusion in the answers to this question between global warming and the effects of acid rain. Most answers described the effects of a rise in CO_2 levels as due to a combination of the two. A lot of answers gained high marks but the answers were usually long winded and a little confused. Many candidates mentioned melting ice caps and flooding due to a rise in sea levels. Many answers stated that there would be a loss of life due to the increase of CO_2 in the atmosphere. Other common misconceptions were that oxygen levels would drop and humans would suffocate and that higher CO_2 levels would lead to an increase in breathing problems such as asthma.

Question 14

This question was about growing crops. It tested the candidates' understanding of competition and also of chemical and biological pest control.
(a) This was not answered particularly well. Few candidates got the idea of competition, but some did make reference to water or light. In response to the part of the question relating to getting rid of weeds, candidates gave a variety of acceptable responses. However, some stated use of chemicals but without qualification.
(b) Most answers for part (i) of this question stated that the insects ate the plants which reduced the yield of the plant. Less than 25% stated the correct answers for the first mark in this question. However, for the second mark a majority of answers related the damage to the leaves to reducing photosynthesis. In part (ii) many candidates gained full marks and it was clear that the idea of biological control was understood well.

Question 15

This question was about genetics. It tested the candidates' ability to perform a genetic cross and to work out the percentage of recessive phenotype offspring in a variety of situations.

(a) A majority of candidates who correctly identified the genotypes of the parents gained high marks for this question. Candidates who identified the genotypes wrongly then went on to use these genotypes to work out the gametes and the offspring well. However, many candidates did not record the phenotype of the offspring. They either recorded a simple ratio or did not record any answer. Candidates seemed to find it difficult to work out the phenotype of the offspring from the genotype which they had recorded.

(b) There was a mixed response for identifying the number of albino offspring in various crosses. Most knew that two was the result from heterozygous and homozygous. Fewer knew that one was the result from heterozygous and heterozygous and also four from homozygous recessive and homozygous recessive. Part (ii) was not answered well. The majority of the answers given related the absence of albino mice in the wild to their genotype. If candidates did manage to relate the absence of albino mice in the wild to their fur colour then they were able to state that their fur colour would mean they were less camouflaged and more likely to be eaten by predators. Many answers stated that the reason albino mice were rare in the wild was because people caught them and kept them as pets which was inferred in the 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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