

# Examiners' Report/ Principal Examiner Feedback

November 2009

IGCSE

IGCSE Biology (4325) Paper 1F

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## General

The paper was felt to be of a similar standard to those set previously. A small number of candidates sat this paper. Their performance was felt to be not quite as good in the 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 (c) where many were clearly confused by the names of plant and animal gametes and (j) where many did not relate menstruation to the day of ovulation indicated on the diagram.

### Question 2

This question tested the candidates' knowledge and understanding of the structure and function of the heart.

(a) Most identified the vessel leading from the body to the heart, but some indicated wrongly the vessels leading into the left, instead of the right atrium. Most knew the vessel leading to the lungs, the aorta and the left ventricle, although some mixed up the pulmonary artery and the aorta.

(b) Most candidates knew that valves stopped the backflow of blood. A very few misunderstood the question and did not relate their answer to blood flow.

### Question 3

This question tested the candidates' knowledge of food webs and the effects of changes to one member on others.

(a) This was well done, with most candidates knowing the number of plants and primary consumers well. Some found it difficult to calculate the number of food chains, though.

(b) Most candidates were able to explain that the number of shrews would decrease. However, if some explained it would make no difference with a suitable explanation, credit was awarded.

(c) Some candidates had trouble in understanding this question that the importance of producers was to make food or provide energy for the rest of the food chain.

### Question 4

This question focused on homeostasis, particularly on regulation on water in the body.

(a) (i), (ii) and (iii) These were answered well, with most candidates gaining full marks. (iv) Most knew that this was to cool down. (v) Most knew that the kidney produced urine, but some wrongly said it was the bladder.

(b) The calculation was done well, with many candidates gaining full marks. Some, who got the answer wrong, but showed their working, were able to gain one mark for this.

(c) Most said correctly carbon dioxide.

(d) This question discriminated well. Most candidates gained one mark for temperature regulation. Only the better candidates scored two marks, usually by also mentioning the control of blood sugar.

### Question 5

This question tested the candidates' understanding of digestion, both the structure of the gut and also its chemical nature.

- (a) Most candidates know where the different aspects of digestion took place.
- (b) Most candidates knew that amino acids were the digestion product of proteins. A few wrongly said fatty acids.

### Question 6

This question was about fermentation.

- (a) Many candidates knew that wine was made by yeast, but some wrongly said bacteria. Most knew that carbon dioxide was produced during fermentation. (iii) The purpose of the air lock discriminated well. Most only gained one mark. Many wrongly said that it was to stop gases escaping. .
- (b) Almost all candidates gained one mark for a line that was rising. However, only the most able gained the second mark for a levelling off. Despite many questions of this type, candidates do not seem to realise there should be two points for the two marks available.

### Question 7

This question tested the candidates' knowledge and understanding of cloning, focused on Dolly the sheep.

Part (a) was answered well, although some candidates got confused about the step depicting the udder cell nucleus being put into an empty egg cell and the step showing the unfertilized egg being removed from an adult sheep.

In part (b) most candidates knew that three different sheep were involved, but some wrongly said two sheep.

(c) Most candidates gained one mark for saying identical, but only a few gained the second mark for linking this to DNA or genes.

### Question 8

This question required candidates to complete the list of characteristics of living things. (a) Most were able to correctly identify reproduction and nutrition as the missing characteristics.

In part (b) candidates were asked to suggest why excretion is important. Almost all responses correctly suggested removal of toxic waste products of metabolism.

### Question 9

This question was about cell structure and function. Candidates were presented with a photograph of a red blood cell.

(a) Almost all of the candidates were able to name haemoglobin as the red pigment that absorbs oxygen. Very few could also explain how the biconcave shape increased the surface area for diffusion of oxygen. Most only gained one mark either for the shape or for the increase of the surface area, but not both.

In part (b) candidates had to draw and label a phagocyte. Marks were awarded for the correct shape of cell and for labelling cell membrane, correctly shaped nucleus and cytoplasm. The complete range of marks was seen. Most candidates were also able to describe how a phagocyte helps to destroy pathogens, but some struggled to use the correct terminology. .

### Question 10

This question tested the candidates' knowledge and understanding of the respiratory system.

In part (a) candidates were shown a diagram of a section through the human thorax. They had to identify the ribs, diaphragm and the spine from the diagram. Most could identify the ribs and the diaphragm but some could not correctly identify the spine.

In part (b) many candidates were able to describe the contraction and flattening of the diaphragm as a person breathes in. Some candidates gave both scenarios breathing out and breathing in, but did not distinguish clearly which was which.

(c) This was answered badly, with many candidates not actually answering the question and not relating their answer clearly to lack of oxygen diffusing in and thus reduced aerobic respiration. Few related this to reduced energy in the muscle cells.

### Question 11

This question was about plant cell structure and the functions of roots.

(a) and (b) This produced a mixed response. Most candidates could label the nucleus, but not many could accurately label the cell membrane. Some candidates drew the line in between the cell wall and the cell membrane.

(c) Most could give osmosis as the mechanism of absorption of water and the better candidates could explain that energy is required to absorb mineral ions into the roots against a concentration gradient. Only the very best candidates could give chlorophyll as a molecule made using magnesium and amino acids/ proteins etc. as a molecule made using nitrates.

### Question 12

This question was about the female reproductive system and how it is adapted for pregnancy.

(a) and (b) This required candidates to name the ovary and oviduct from a diagram and then identify the part that releases progesterone. Most candidates were able to do this with only a few failing to earn credit. Part (b) also asked why it is important that progesterone is released during pregnancy and many correctly identified the role it plays in preventing breakdown of the uterus lining.

(c) This required candidates to identify the placenta and give two of its functions. Many gained credit for describing the provision of glucose or oxygen for the embryo and the removal of metabolic waste. Some candidates were able to state the number of chromosomes as 46, or 23 pairs, but a significant number gave 23.

### Question 13

This question was about the carbon cycle.

(a) Candidates had to name two molecules found in plants that contain carbon. Many were able to do this common answers being starch, glucose, cellulose and amino acids. Some were able to give at least one way in which carbon in plants is released into the atmosphere, with respiration being the most common answer. Many give one consequences of global warming, usually to do with flooding.

(b) The best answers described how the gas dissolves in water to form acid rain which then falls to earth where it can harm plant and aquatic life. However, most only gained one mark for mentioning acid rain or that plant/animal life could be adversely affected.

#### Question 14

This question required a longer prose answer explaining how glasshouses increase crop yield for a named plant. Although most candidates were able to score well, few named a crop. Candidates generally gained credit for suggesting control of lighting, heat, carbon dioxide and regulating water supply and how this leads to a higher rate of photosynthesis. Some just gained one mark for indicating that photosynthesis would be increased.

## BIOLOGY 4325, GRADE BOUNDARIES

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

	A*	A	B	C	D	E	F	G
Foundation Tier				58	46	34	23	12
Higher Tier	78	67	56	45	34	28		

Option 2: with Coursework (Paper 04)

	A*	A	B	C	D	E	F	G
Foundation Tier				N/A	N/A	N/A	N/A	N/A
Higher Tier	83	72	61	50	39	33		

No candidates at foundation tier entered coursework so there are no grade boundaries for this category.

**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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