

Examiners' Report/ Principal Examiner Feedback

November 2009

IGCSE

IGCSE Science (Double Award) (4437) Paper 1F

Edexcel is one of the leading examining and awarding bodies in the UK and throughout the world. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers.

Through a network of UK and overseas offices, Edexcel's centres receive the support they need to help them deliver their education and training programmes to learners.

For further information please call our Customer Services on + 44 1204 770 696, or visit our website at www.edexcel.com.

If you have any subject specific questions about the content of this Examiners' Report that require the help of a subject specialist, you may find our **Ask The Expert** email service helpful.

Ask The Expert can be accessed online at the following link:

<http://www.edexcel.com/Aboutus/contact-us/>

Alternately, you can speak directly to a subject specialist at Edexcel on our dedicated Science telephone line: 0844 576 0037

(If you are calling from outside the UK please dial + 44 1204 770 696 and state that you would like to speak to the **Science** subject specialist).

November 2009

Publications Code UG022403

All the material in this publication is copyright

© Edexcel Ltd 2009

General

Very few candidates sat this paper. It was felt to be of a similar standard to those set previously.

Comments on individual questions

Question 1

The multiple choice questions were answered fairly well on the whole. Most candidates scored 4 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 (g) where many did not relate menstruation to the day of ovulation indicated on the diagram.

Question 2

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 3

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) 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 4

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 5

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 6

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 7

This question was about cell structure and function. Candidates were presented candidates 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 8

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 9

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

(a) & (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 10

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.

(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 11

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.

SCIENCE (DOUBLE AWARD) 4437, GRADE BOUNDARIES

Option 1 : with Paper 7 (Biology) & Paper 8 (Chemistry)

	A*	A	B	C	D	E	F	G
Foundation Tier				52	42	32	23	14
Higher Tier	76	65	54	44	35	30		

Option 2 : with Paper 7 (Biology) & Paper 9 (Physics)

	A*	A	B	C	D	E	F	G
Foundation Tier				52	42	32	23	14
Higher Tier	76	65	54	43	35	31		

Option 3 : with Paper 8 (Chemistry) & Paper 9 (Physics)

	A*	A	B	C	D	E	F	G
Foundation Tier				53	43	33	24	15
Higher Tier	N/A	N/A	N/A	N/A	N/A	N/A		

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

Option 4: with Coursework (Paper 10)

	A*	A	B	C	D	E	F	G
Foundation Tier				N/A	N/A	N/A	N/A	N/A
Higher Tier	N/A	N/A	N/A	N/A	N/A	N/A		

No candidates entered coursework so there are no grade boundaries for this option.

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

Further copies of this publication are available from
International Regional Offices at www.edexcel.com/international

For more information on Edexcel qualifications, please visit www.edexcel.com
Alternatively, you can contact Customer Services at www.edexcel.com/ask or on + 44 1204 770 696

Edexcel Limited. Registered in England and Wales no.4496750
Registered Office: One90 High Holborn, London, WC1V 7BH