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Examiners' Report
March 2013

GCSE Biology 5BI1F 01

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March 2013

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Introduction

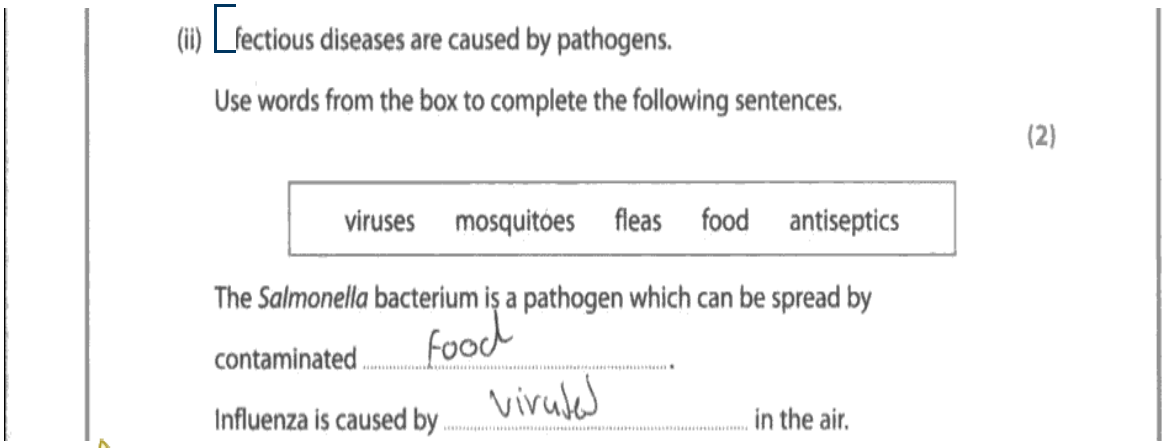
This paper is the fifth series from the teaching of the September 2011 specification and aimed to allow a broad spectrum of candidates to score a wide range of marks throughout. The papers are designed with variety and application in mind, to test the aptitude of candidates and to challenge and stretch the most able in the category of Foundation qualification. This paper assesses a range of topic areas from the specification; from disease to pollution and classification to drug abuse. The assessment objectives have been concisely selected to assess the practical abilities of candidates together with the knowledge they have gained through the teaching. Mathematical skills are also assessed and these scored highly. A range of question styles are provided, from multiple choice questions to longer style answers that assess the quality of a candidate's written communication skills. The shorter style questions are the most numerous in this paper.

This report will provide exemplification of candidates' work, together with tips and/or comments, for a selection of questions. The exemplification will come mainly from questions which required more complex responses from candidates.

Disease

Question 1(a)(ii)

This missing words exercise allowed candidates to choose words from the box to complete the sentences regarding infectious diseases. Many candidates obtained full marks for this exercise.



(ii) fectious diseases are caused by pathogens.

Use words from the box to complete the following sentences.

(2)

viruses	mosquitoes	fleas	food	antiseptics

The *Salmonella* bacterium is a pathogen which can be spread by contaminated Food.

Influenza is caused by virus in the air.

ResultsPlus
examiner comment

This candidate has clearly indicated the correct answers. 2 marks awarded.

ResultsPlus
examiner tip

It must be remembered that if words are provided they cannot be used twice and any script seen to use the words twice will be marked as incorrect.

(ii) Infectious diseases are caused by pathogens.

Use words from the box to complete the following sentences.

(2)

viruses	mosquitoes	fleas	food	antiseptics

The *Salmonella* bacterium is a pathogen which can be spread by contaminated food.

Influenza is caused by mosquitoes in the air.

ResultsPlus
examiner comment

Many candidates scored well on the 'contaminated food' answer but, as can be seen in this script, the second answer is incorrect. 1 mark awarded.

Question 1(a)(iii)

This was a short answer style question worthy of 2 marks. The mark scheme provided a range of chemical and physical barriers to pathogen entrance, of which candidates needed to mention two to gain full marks, or describe one in terms of how it provides prevention. This question was very well answered by many candidates.

This was a 'recall' style assessment objective that allowed candidates to state what they had learned in their lessons. It must be said also that the spelling of the terminology was very impressive. These barriers are also taught in Key Stage 3 so it was hoped that this would, as it did, score well.

(iii) Describe how pathogens are prevented from entering the human body.

(2)

They are prevented from entering the human body because of the body's defence mechanisms which include skin and sticky mucas.

ResultsPlus
examiner comment

This is a concise and clear answer. The candidate has stated that skin and sticky mucus are two defence mechanisms, which has gained 2 marks.

ResultsPlus
examiner tip

There is no need to reiterate the examiners' question.

(iii) Describe how pathogens are prevented from entering the human body.

(2)

You are given an injection which makes your body immune prevents pathogens from entering.

ResultsPlus
examiner comment

This style of answer was seen regularly; the comments regarding white blood cells, vaccinations or immunological variations are clearly incorrect. This candidate scored no marks.

Question 1(b)(i)

This question aimed to test the candidates' mathematical abilities. A simple subtraction was required between two numbers, 36 and 20. Many candidates also provided their calculations, although this could not be given credit as the question only scored 1 mark. The question was generally well answered.

(i) Calculate the difference in diameter of the light grey areas surrounding disc **A** and disc **B**.

(1)

16 mm

ResultsPlus
examiner comment

There was no need for any calculations to be shown as this is only a one mark item. The correct answer can be seen here clearly. 1 mark awarded.

(i) Calculate the difference in diameter of the light grey areas surrounding disc **A** and disc **B**.

(1)

1.6 mm

ResultsPlus
examiner comment

Unfortunately, this candidate has placed a decimal point in their answer, giving 1.6, which is not the correct answer. No marks awarded.

ResultsPlus
examiner tip

Candidates must remember to write their answers clearly on the answer lines to be awarded credit.

Question 1(b)(ii)

This question was designed to assess the candidates' ability to determine which antibiotic had worked most efficiently from the information provided. 'Antibiotic A' was expected, together with a comparative statement between this and another disc – with any notion of largest, larger, biggest or bigger area of non-growth being acceptable as an explanation. A statement that the bacteria were killed as they were merely prevented from growing was not acceptable.

This was answered well in terms of stating the antibiotic, but less well for the explanation.

(ii) Explain which antibiotic disc, **A**, **B** or **C**, has controlled bacterial growth most effectively.

(2)

Antibiotic disk C controlled the bacterial growth most effectively because it has none around the disk but disk A and B do.

ResultsPlus
examiner comment

This candidate has clearly either not read the question stem or has misinterpreted the question completely. The light grey area was the area in which bacteria did not grow. Therefore, antibiotic disc C did not stop any bacteria growth. No marks awarded.

(ii) Explain which antibiotic disc, **A**, **B** or **C**, has controlled bacterial growth most effectively.

(2)

Disc A controlled it but because ~~the~~ it has the biggest section where the bacteria would not grow.

ResultsPlus
examiner comment

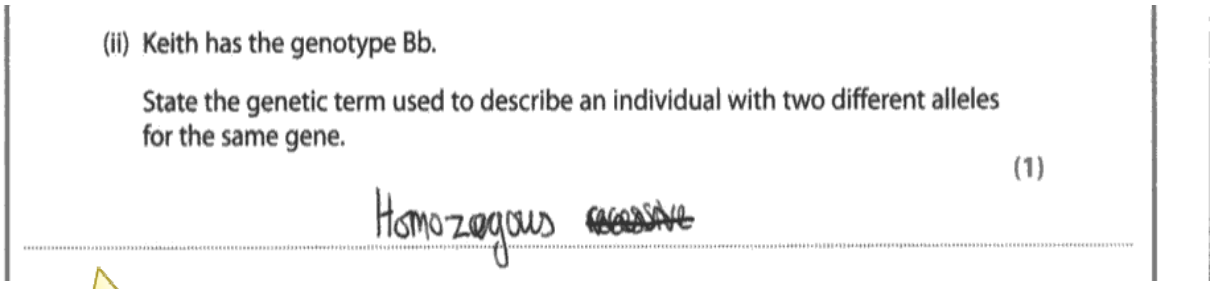
A concise answer here, using a comparative phrase 'biggest'. 2 marks awarded.

Inheritance of eye colour

Question 2(a)(ii)

This question was designed to allow candidates to access a recall statement about the words used in the field of genetics. These terms are very specific and therefore only one answer was correct, 'heterozygous', with no alternatives.

Recognisable spellings were largely accepted.



(ii) Keith has the genotype Bb.

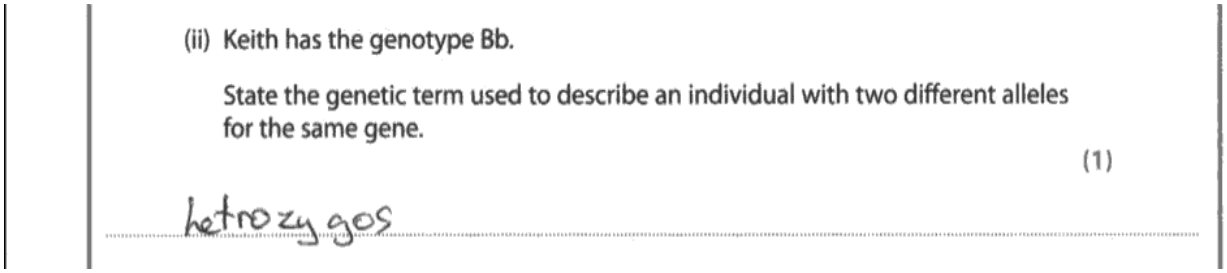
State the genetic term used to describe an individual with two different alleles for the same gene.

(1)

Homozygous ~~recessive~~

ResultsPlus
examiner comment

This candidate has a grasp of biological terminology but unfortunately chose the incorrect term as the answer. No marks awarded.



(ii) Keith has the genotype Bb.

State the genetic term used to describe an individual with two different alleles for the same gene.

(1)

hetrozygos

ResultsPlus
examiner comment

Here is an example of where a candidate has attempted to provide the correct answer, which can be accepted regardless of the poor spelling of the specific word. The spelling can be recognised as 'heterozygous', therefore 1 mark was awarded.

Question 2(a)(iii)

This question required candidates to complete the Punnett Square to determine the genotypes of the offspring for Keith and Jane.

This question was very successfully answered, with many candidates recognising that genotypes require two alleles.

(iii) Complete the Punnett square for Jane and Keith.

(1)

Keith's gametes

Jane's gametes	B	b
b	b	bb
b	b	bb

ResultsPlus
examiner comment

This candidate has not recognised that all genotypes require two alleles. They have almost achieved the correct answer but have omitted the dominant allele for two of the offspring. No marks awarded.

(iii) Complete the Punnett square for Jane and Keith.

(1)

Keith's gametes

Jane's gametes	B	b
b	Bb	bb
b	Bb	bb

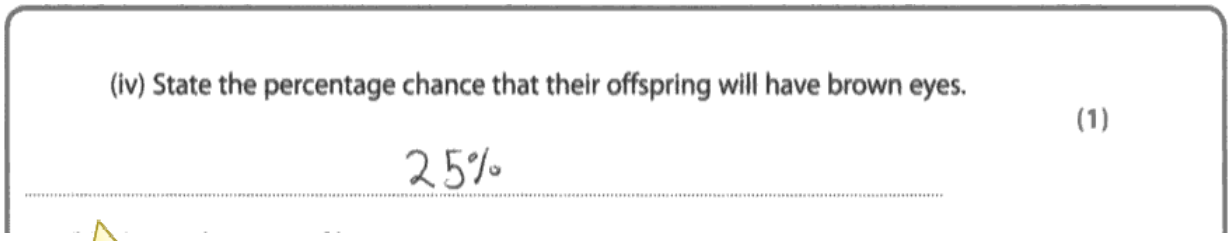
ResultsPlus
examiner comment

This candidate has supplied the correct answers clearly and concisely in terms of genotypes. 2 marks awarded.

Question 2(a)(iv)

This question was linked to Q2(a)(iii) and asked candidates to analyse their Punnett Square results to find the percentage chance that Keith and Jane's children will have brown eyes – 50%.

Many candidates scored well here. However, this was based on the assumption that candidates secured the correct answer for Q2(a)(iii).



(iv) State the percentage chance that their offspring will have brown eyes. (1)

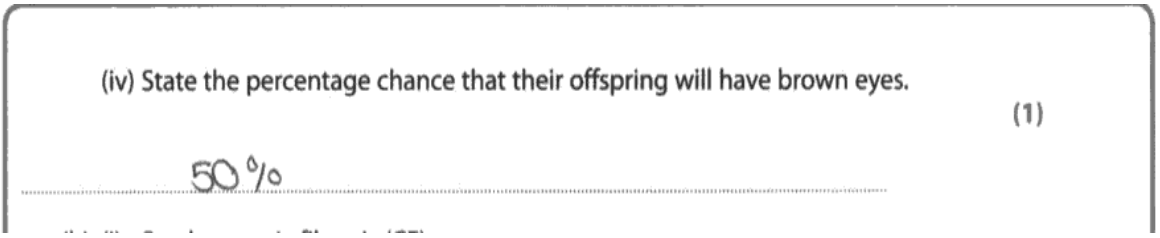
25%

ResultsPlus
examiner comment

Here, it is likely that the candidate did not access the correct answer for Q2(a)(iii) and therefore concluded that only one in four of the children will have the chance of brown eye phenotype. No marks awarded.

ResultsPlus
examiner tip

It must be remembered that if a percentage is asked for, a percentage should be provided.



(iv) State the percentage chance that their offspring will have brown eyes. (1)

50%

ResultsPlus
examiner comment

A correct answer here that is clear and easy to assess. 1 mark awarded.

Question 2(b)(i)

This question required candidates to suggest how Sue (Keith and Jane's child) had inherited a disorder from parents who did not suffer from the disorder. This was quite a high level question and required candidates to make connections with genotypic alleles and inheritance of recessive alleles.

For 1 mark candidates needed to state that the parents were 'carriers' of the disorder or were heterozygous/had one recessive allele each. The second mark was awarded for stating that Sue must have inherited one recessive allele from her mother and one from her father.

Many candidates scored at least 1 mark here, usually for the 'carrier' answer.

(b) (i) Sue has cystic fibrosis (CF).

Her parents, Jane and Keith showed no symptoms of this disorder.

CF is a genetic disorder caused by recessive alleles.

Explain how Sue inherited CF.

(2)

sue inherited CF ~~bbg~~ because her parents are only carriers of the disorder so sue inherited the recessive alleles for CF because her parents both have dominant and recessive alleles.

ResultsPlus
examiner comment

This candidate has attempted to explain why Sue has cystic fibrosis. The mark for 'carrier' has been achieved but unfortunately the second mark has not been awarded as it has not been stated that the recessive alleles have come from both parents, or that two recessive alleles have been inherited. 1 mark awarded.

(b) (i) Sue has cystic fibrosis (CF).

Her parents, Jane and Keith showed no symptoms of this disorder.

CF is a genetic disorder caused by recessive alleles.

Explain how Sue inherited CF.

(2)

Sue has got the two recessive alleles that she had inherited by both her parents, her mother may have one recessive allele and her father have the other.

ResultsPlus
examiner comment

This candidate has gained both marks as it is stated that Sue has two recessive alleles from both of her parents and that the parents would have had one recessive allele each. A concise and clear answer , awarded 2 marks.

Question 2(b)(ii)

This question asked candidates to suggest why Sue may have breathing problems due to her cystic fibrosis. A consequence of cystic fibrosis is the build up of excess mucus. Any suggestion from candidates that thick/sticky mucus or an accumulation of mucus occurred scored 1 mark.

A suggestion that lung function was restricted gained a second mark. The verbs 'clogging' or 'blocking' were seen often and were creditworthy. However, the suggestion that mucus blocked 'airways' was not accepted.

A mark was also awarded where candidates suggested that less oxygen diffused into the bloodstream. This point was scored less frequently; any suggestion that less oxygen was being placed into the body was worthy of credit.

(ii) Describe why CF may cause Sue to have breathing problems.

(2)

When you have CF, your lungs get clogged up with a thick mucus and this makes breathing difficult.

ResultsPlus
examiner comment

This candidate has stated that thick mucus is produced, which clogs the lungs – a concise answer for 2 marks. Many questions will result in a variety of responses and the mark scheme is flexible enough to accommodate this.

(ii) Describe why CF may cause Sue to have breathing problems.

(2)

Because mucus over produces in the lungs and if not coughed up it can cause your lungs to block and could lead to death

ResultsPlus
examiner comment

Here is another way to answer this question, again scoring 2 marks. 'Mucus over produces' gains 1 mark and 'lungs blocking' is worthy of a second mark.

Drugs

Question 3(a)

This question was designed to allow candidates to link boxes with one straight line from each drug to the example of that classification of drug.

This was accessed well by many candidates; however, it has to be remembered that only one line is required from each box and any divergence from this instruction negates the whole answer for the question. Some candidates are still drawing more than one line, thus scoring no credit.

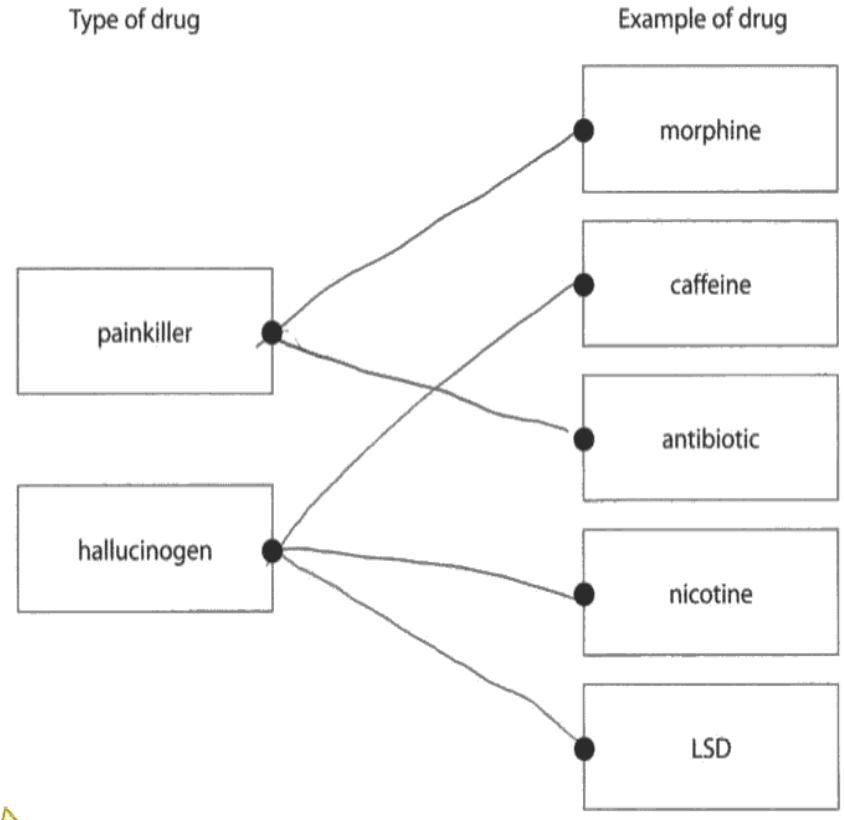
The painkiller was morphine and the hallucinogen was LSD.

Drugs

3 A drug is a substance that can change the way the human body works.

(a) Draw **one** straight line from each type of drug to an example of that type of drug.

(2)



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examiner comment

This candidate has drawn more than one line from the type of drug. Therefore this script scored no marks.

ResultsPlus
examiner tip

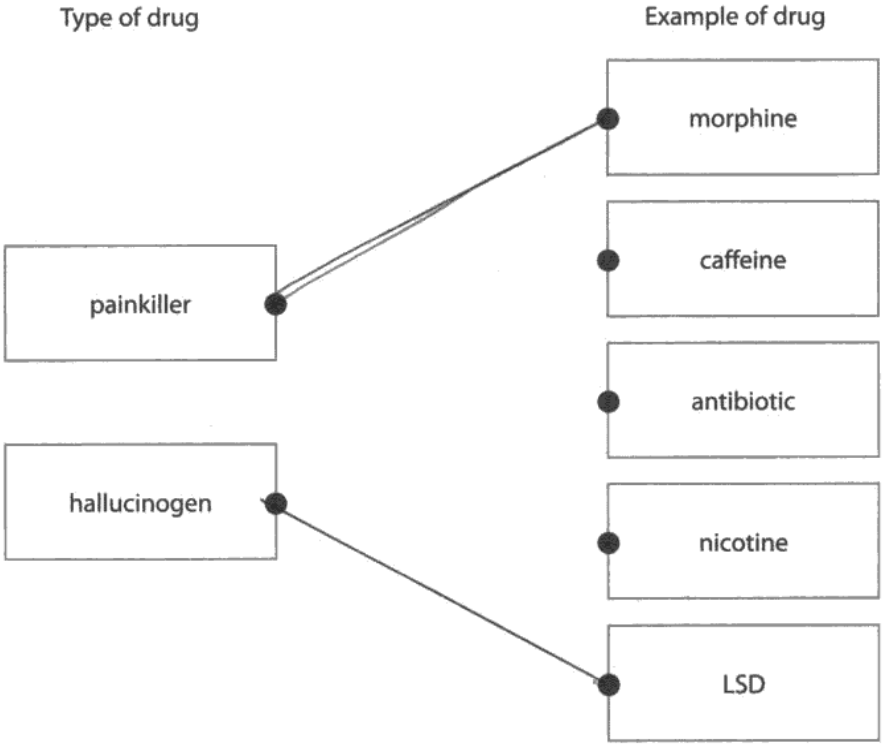
Instructions are always clearly stated within the question. These must be followed to achieve the marks.

Drugs

3 A drug is a substance that can change the way the human body works.

(a) Draw **one** straight line from each type of drug to an example of that type of drug.

(2)

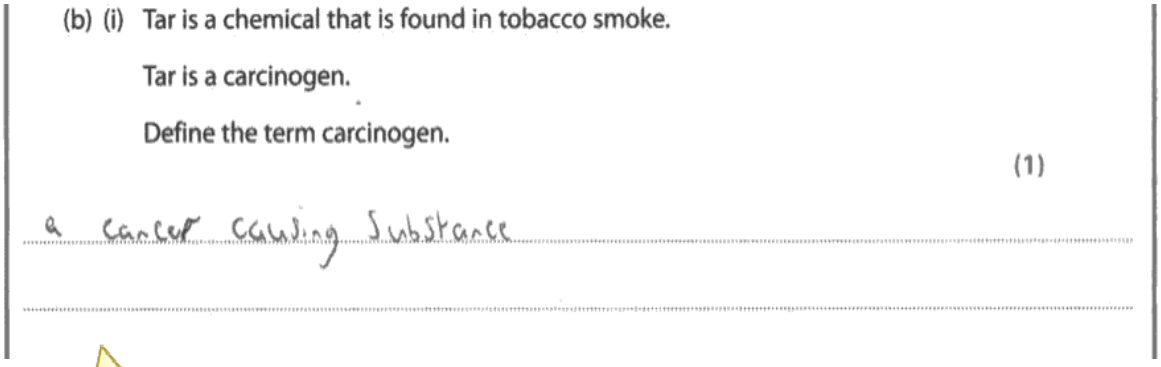


ResultsPlus
examiner comment

This candidate clearly has adhered to the instruction of drawing only one line from each type of drug and has scored both marks here for the correct lines in the correct places.

Question 3(b)(i)

This question asked candidates to state the definition of the term 'carcinogen', which is clearly in the specification as a recall statement. Unfortunately, many candidates merely stated that tar was a substance that made the lungs black, therefore misunderstanding the question.



(b) (i) Tar is a chemical that is found in tobacco smoke.

Tar is a carcinogen.

Define the term carcinogen.

(1)

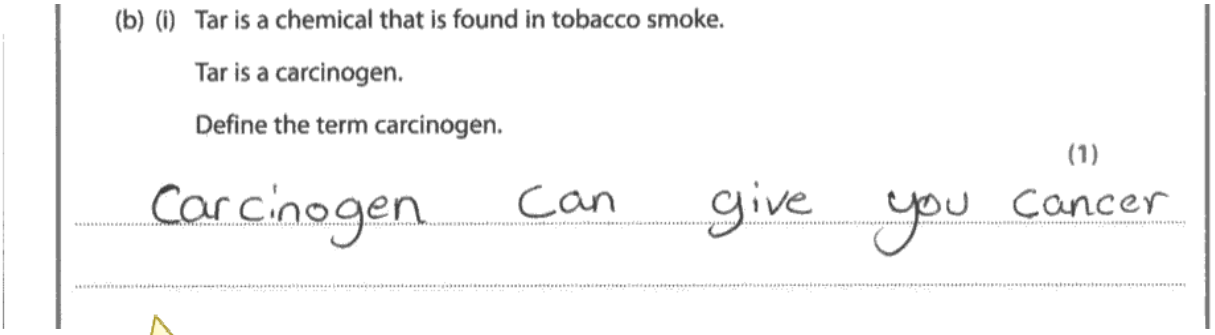
a cancer causing substance

ResultsPlus
examiner comment

This is exactly the answer that was required – a simple and concise phrase that has clearly been learnt through careful revision. 1 mark awarded.

ResultsPlus
examiner tip

Candidates must remember to read the question very carefully before writing their answer.



(b) (i) Tar is a chemical that is found in tobacco smoke.

Tar is a carcinogen.

Define the term carcinogen.

(1)

Carcinogen Can give you cancer

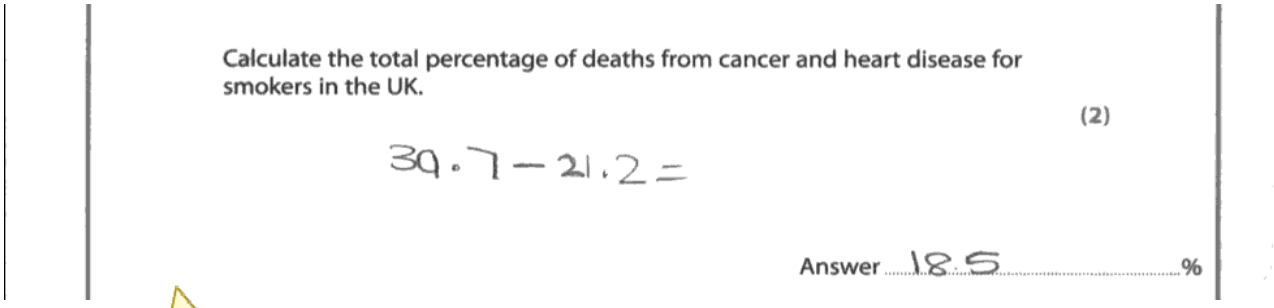
ResultsPlus
examiner comment

This was recognised as an acceptable way of stating that carcinogens are cancer-causing substances. It was rare to see an answer that was concise as per the mark scheme, but any notion of cancer being developed was creditworthy. 1 mark awarded.

Question 3(b)(ii)

A mathematical question that asked candidates to analyse the pie chart and calculate the total deaths from two diseases. Candidates scored 1 mark for correctly extracting the correct figures 39.7% and 21.2% and the second mark for the correct answer from the addition of these two numbers.

Any candidates who stated the correct answer were automatically awarded 2 marks.



Calculate the total percentage of deaths from cancer and heart disease for smokers in the UK.

(2)

39.7 − 21.2 =

Answer 18.5 %

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A clear extraction of the appropriate figures for 1 mark, yet the candidate has not calculated the answer required. 1 mark awarded.

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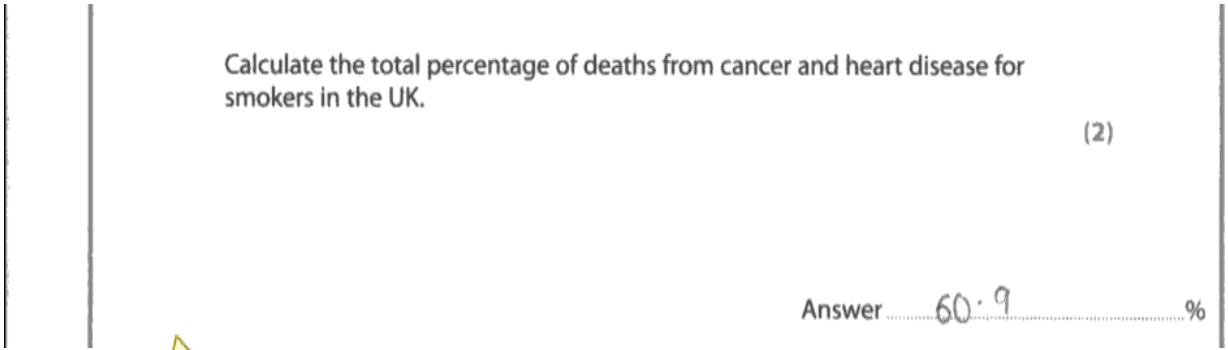
Candidates must remember to always show their mathematical workings for 2 mark questions. This shows examiners how they arrived at their answer, because their working can be credited even if the answer is wrong.



Calculate the total percentage of deaths from cancer and heart disease for smokers in the UK.

(2)

Answer 60.9 %

ResultsPlus
examiner comment

This candidate has scored both marks for simply placing the correct answer on the answer line. 2 marks awarded.

Question 3(b)(iii)

This question asked candidates to explain why smoking would affect the exercise capabilities of individuals. 1 mark was awarded for stating that it would reduce the exercise capabilities. The second mark was awarded for candidates who stated a plausible effect on the lungs, such as tar build up or damage to the alveoli. A third mark was awarded if a candidate had mentioned that breathing became difficult and also that carbon monoxide replaced oxygen on the red blood cells.

Many candidates scored the mark for breathing problems with ease; however, surprisingly, many candidates did not state that exercise would be reduced.

(iii) Explain how smoking tobacco may affect a person's ability to exercise.

(3)

When people smoke, tar is released from the ~~cigg~~ tobacco, which goes into the lungs and causes difficulty breathing, which would decreas stamina, there for making exercise in general harder.

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examiner comment

There are many ways in which candidates stated each marking point. This candidate has gained 1 mark for stating that tar will be placed into the lungs, another mark for stating that breathing becomes difficult and a third mark for stating that exercise becomes harder to carry out.

While this response was somewhat less clear and non-technical it was still creditworthy here for 3 marks.

(iii) Explain how smoking tobacco may affect a person's ability to exercise.

(3)

It affects it because means the lungs are full of tar they not be able to take in all the oxygen which means it affects a person and makes them get out of breath easier.

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examiner comment

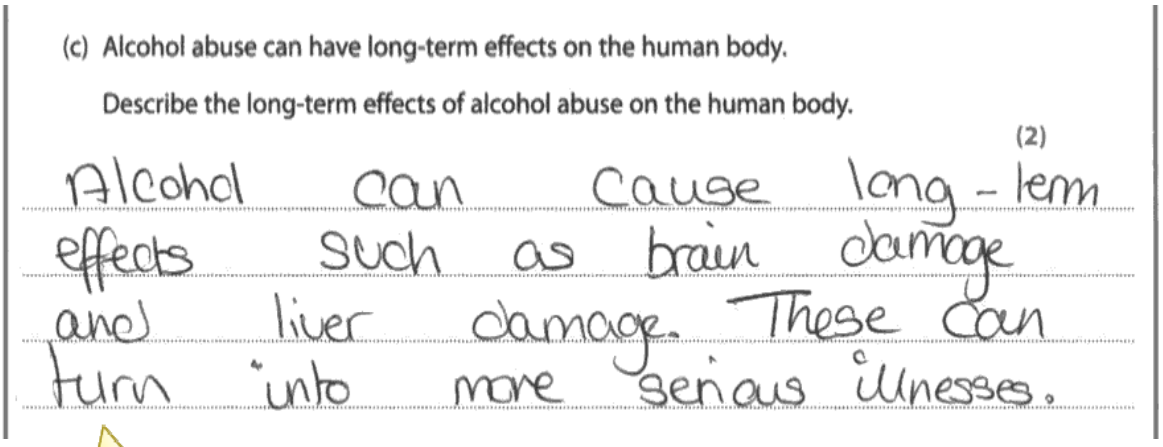
This candidate has secured marks for the 'effect on the lungs' (tar fills the lungs) and also that the smoker will have breathing problems (in the last line here).

However, any mention of oxygen issues needed to be in the context of a reduction in the carrying capacity of haemoglobin, therefore credit was not given here for that part of the answer. 2 marks awarded.

Question 3(c)

This 2 mark question asked candidates to state the long-term effects on the human body due to alcohol abuse. This question scored very well with many candidates and the mark scheme allowed three possible effects: liver damage (cirrhosis), brain damage and kidney damage.

Liver damage and brain damage were the most popular answers seen.



(c) Alcohol abuse can have long-term effects on the human body.

Describe the long-term effects of alcohol abuse on the human body.

(2)

Alcohol can cause long-term effects such as brain damage and liver damage. These can turn into more serious illnesses.

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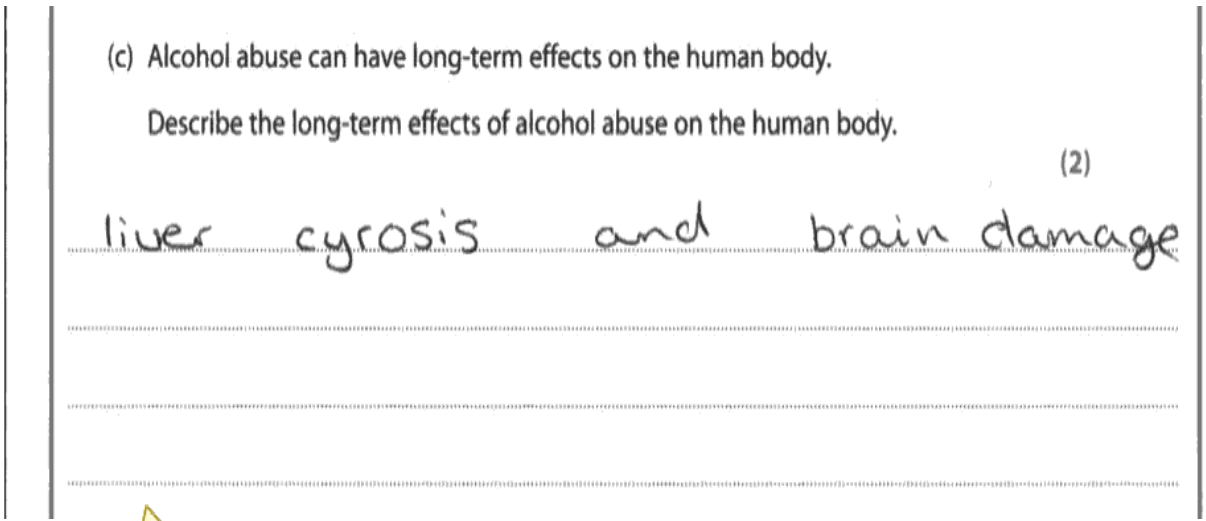
This answer was very clear and concise and scored 2 marks for stating liver damage and brain damage. It would be nice to see candidates using more technical terminology, however, such as liver cirrhosis. 2 marks awarded.



(c) Alcohol abuse can have long-term effects on the human body.

Describe the long-term effects of alcohol abuse on the human body.

(2)

liver cyrosis and brain damage

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examiner comment

This candidate has accessed both marking points despite the inaccurate spelling of the word cirrhosis as cyrosis. 2 marks awarded.

Regulation

Question 4(a)(ii)

This question asked candidates to state which hormone was responsible for lowering blood glucose level. Again, a recall-style answer that was thought to be relatively easy to access. This was the case as many candidates scored the mark here. Other hormones such as glucagon were seen and a marked number of candidates wrote the word pancreas down despite this being the answer to the previous multiple choice question.

(ii) State the name of the hormone that lowers the blood glucose level.

(1)

pancreas

ResultsPlus
examiner comment

A clear example of where a candidate has incorrectly lifted their answer from the multiple choice question from Q4(a)(i) and therefore scored no marks.

(ii) State the name of the hormone that lowers the blood glucose level.

(1)

Insulin

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This correct answer is very easy to mark as it is clearly written. I mark awarded.

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examiner tip

Candidates must remember that neat handwriting is always helpful for these scripts to be assessed with ease.

Question 4(a)(iii)

This question asked candidates to describe how the liver was involved with the lowering of blood glucose. Candidates had to suggest that glucose was converted into another substance for 1 mark. They also had to suggest what substance glucose was converted into (glycogen) and that this was then stored in the liver.

This item was not accessed well as candidates were not specific enough in their answers. Merely stating that glucose was stored was not creditworthy unless it was coupled with 'as glycogen'. Indeed, many candidates were penalised for incorrectly spelling glycogen as glucagon or glucagen; this was unacceptable here.

(iii) Describe what happens in the liver to lower the blood glucose level.

(2)

in the liver glucose gets turned into glycogen which lowers the blood glucose level.

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This candidate has clearly and concisely stated that glucose is turned into (1 mark) glycogen (1 mark). A pleasing answer awarded both marks.

Question 4(b)(i)

This question was designed to allow candidates to state how the body temperature was detected by the human body. However, the majority of candidates answered with how the body responds to temperature deviations from 37 degrees; which was not what the question was asking unfortunately.

The answers that were accepted were the idea of temperature receptors (1 mark) being found in the skin (1 mark) and that these sent electrical impulses to the brain or hypothalamus (1 mark), with a maximum of 2 marks.

(b) (i) Temperature can also be regulated in the human body.

Describe how changes in external temperature are detected by the human body.

(2)

The receptor in your skin detects a change, which then passes on a message to the hypothalamus so the effectors will respond to the change.

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This is a very well-crafted answer from the candidate, which hits all three marking points with clarity and accessibility. A mark has been awarded for 'receptor' as well as 1 mark for the location of the receptors in the skin. The electrical impulses (messages) mark can also be seen here; however 2 marks have already been awarded.

(b) (i) Temperature can also be regulated in the human body.

Describe how changes in external temperature are detected by the human body.

(2)

The receptors detects the stimulus and send a message to CNS by sensory neurons.

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examiner comment

This candidate has been awarded 2 marks as they have stated that receptors are the detecting structures for temperature and that messages are sent to the CNS.

CNS was an acceptable alternative to hypothalamus.

Question 4(b)(ii)

This question required candidates to state that sweat glands were the structures that released sweat when the body became heated (1 mark), that this sweat evaporated (1 mark) and that this evaporation allowed the body to cool (1 mark). A maximum of 2 marks were available.

This question was accessed extremely well by many candidates.

(ii) Explain how sweat glands can help to regulate body temperature.

(2)

When you are hot the body letsout sweat from sweat glands this is because sweat cools our body ~~body~~ tempreture by evapurating into the air and giving us that cool sensation.

ResultsPlus
examiner comment

While this response was not very concise, therefore somewhat less easy to mark, all the elements are there to award maximum marks here. The letting out of sweat from the sweat glands is creditworthy, as too is the idea of evaporation of this sweat. 2 marks awarded.

(ii) Explain how sweat glands can help to regulate body temperature.

(2)

* Sweat glands release Sweat, sweat ten rises to the Surface, water evaporates makes the body cool.

ResultsPlus
examiner comment

This candidate has produced a clear and concise answer that is easily accessible to the examiners. All three marking points have been accessed for a maximum of 2 marks awardable.

Question 4(b)(iii)

This question asked candidates to explain how the hair on a person can help in their temperature regulation. The majority of candidates stated that the hair on the body will rise (1 mark). Many failed to access the first mark, which was to state what caused this hair rising (erector muscle). A third mark could be gained if candidates correctly suggested what effect the hair rising provided; layers of air being trapped was creditworthy; layers of heat being trapped was not.

(iii) Explain how the hair on a person's body can act to keep the body warm.

(2)

the hair on your body sticks up trapping air between your skin ~~at~~ and hair.

ResultsPlus
examiner comment

It is clear that candidates will answer these questions in a variety of ways. This candidate has stated that hairs will stick up; this is clearly going to be an acceptable alternative to 'the raising of hairs' so 1 mark has been awarded here.

A second mark has been awarded as they have stated that air will be trapped. A clear and concise answer provided. 2 marks awarded.

(iii) Explain how the hair on a person's body can act to keep the body warm.

(2)

Hair erector muscles make hair ~~lie flat~~ stand up, this allows air to be ~~kept~~ trapped near the skin.

ResultsPlus
examiner comment

A wonderful answer seen here with all three marking points accessed and explained very well. 2 marks awarded.

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It can be seen here that the candidate has written something first (which was incorrect) and amended it after evaluating their answer. Evaluating your final answer is always a wise option and can allow the candidate to score more marks overall.

Pollution

Question 5(a)(i)

A mathematical question that asked candidates to subtract two numbers from the table. The two numbers were 204 and 14 with the correct answer of 190 being accepted. This was only worthy of 1 mark and therefore calculations were not required.

Question 5(a)(ii)

This question asked candidates to describe the effect of sulfur dioxide on the number of trees with lichen. The majority of answers scored 1 mark for stating that the higher the sulfur dioxide concentration, the lower the number of trees with lichen. However, a second mark for a comparative statement was rarely seen unfortunately.

(ii) Describe the effect of sulfur dioxide on the number of lichen.

(2)

If there is more sulfur dioxide it's more likely for the trees to have less lichen. I know this because C sulfure dioxide leave are 10ppm and there are 14 lichen trees. On the other han B have 1ppm of sulfure dioxide and 437 trees have lichens growing on them.

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This answer has clarity and is easily accessible to the examiner. The statement for marking point 1 is clear and also the comparison uses the two extreme values of sulfur dioxide as evidence for the statement. 2 marks awarded.

(ii) Describe the effect of sulfur dioxide on the number of lichen.

(2)

the less sulfur dioxide there is present the more trees will have lichen growing on them.

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A short, simple, correct statement for marking point 1. However, the lack of comparison to provide evidence for this statement has hindered the awarding of both marks. 1 mark awarded.

Question 5(b)(ii)

This missing word question was accessed relatively well by the majority of candidates. Words from the box were expected to be seen in the missing word area. The first word that was required was 'increase' – this was seen in almost every script assessed. The second word of 'nitrates' was seen less frequently, but still accessed relatively well.

(ii) Use words from the box to complete the following sentences.

auxins	nitrates	decomposers
increases	decreases	

(2)

As the human population ..increases.., more food needs to be grown.

This can lead to more ..nitrates.. being used which can pollute the environment.

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This example highlights the need for legible handwriting from the candidates. While the correct answers can be read here, some styles of handwriting can make it hard for the examiner to assess whether the correct answer has been given. However, here they have scored 2 marks.

(ii) Use words from the box to complete the following sentences.

auxins	nitrates	decomposers
increases	decreases	

(2)

As the human population increases, more food needs to be grown.

This can lead to more decomposers being used which can pollute the environment.

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Here the candidate has accessed marking point 1; however they have stated that decomposers would be responsible for the environmental pollution. The nitrates are the cause unfortunately. 1 mark awarded.

Question 5(b)(iii)

This is the first of the 6-mark style questions on the paper. It asked candidates to explain how the process of eutrophication can occur and lead to the reduction of freshwater shrimps within a stream.

Many candidates scored well here and examiners are also analysing the candidates' method of written communication in terms of how clearly the answer is given and whether the spelling, punctuation and grammar are sufficiently accurate.

The marks are assigned using a levelling system. Level 1 is for a limited statement to how eutrophication occurs and stating just one stage of the process. If this is clearly stated then the candidate has gained 2 marks. Level 2 is awarded if a candidate has stated a simple explanation of two or three stages to eutrophication and can be awarded 4 marks if their communication is sufficiently adequate to be marked without difficulty. Level 3 can be accessed by the candidates stating a detailed explanation of four or more stages to eutrophication and all 6 marks are awarded if the answer is clear and communicated well.

The stages for eutrophication can be seen in the mark scheme. There is a mark for nitrate use, a mark for algae, a mark for plant death, a mark for bacterial and a mark for anoxic.

*(iii) Explain how the process of eutrophication could occur in a stream and may lead to a reduction in the number of freshwater shrimps.

(6)

The fertilisers go into the river that makes the algae grow quickly. It goes to the top of the river and creates a barrier so light can't get to the plants. The plants die out and it starts to decompose. There is no more oxygen in the water because all the plants are gone. The fish have no oxygen so it will die out. There will be no organisms left in the river. Fresh water shrimps like clean water and if there is no oxygen in the river the fresh water shrimps would decrease.

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This candidate has accessed level 3 and all 6 marks as their communication is adequate for the QWC mark assigned to each level. The science behind their answer is very detailed with comments on the use of nitrates, the idea of algal growth leading to a sunlight blockage and plant death. A lack of oxygen due to the plant decomposition is also seen.

*(iii) Explain how the process of eutrophication could occur in a stream and may lead to a reduction in the number of freshwater shrimps.

(6)

eutrophication goes into the stream then grows which may cause some freshwater shrimps to die because it allows less oxygen for them so some will die.

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Here, the candidate has accessed 2 marks as their communication style is quite positive. However, the lowest level has been assigned as the candidate has only provided a limited explanation to one stage (namely, the lack of oxygen killing freshwater shrimp).

The axolotl

Question 6(a)(i)

This question asked candidates to analyse the photograph and ascertain any reasons as to why the axolotl is a difficult living organism to classify. There were certain clues in the stem of the question with the phrasing 'it is not a fish, it is an amphibian'. This helped most candidates to secure the marks here.

Marking point 1 allowed candidates to be quite general and state that the axolotl has features of both a fish and an amphibian. Marking points 2 and 3 allowed candidates to be more specific about what these features were, namely that it has feet/legs and also gills.

(a) (i) Suggest why scientists find it difficult to classify the axolotl.

(2)

Because it breaths under water but it also has legs it has gills

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A clear uncomplicated answer here, which scored both feature marks for marking point 2 and marking point 3. 'It has legs and gills' are both creditworthy responses here. 2 marks awarded.

(a) (i) Suggest why scientists find it difficult to classify the axolotl.

(2)

Because it has feautures from different species, for instance, gills from a fish and the feet of an amphibian

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This is an interesting response as it scores all three marking points in a very rounded manner. The two features are stated in between the candidate stating that the axolotl has features from fish and amphibian. 2 marks awarded.

Question 6(a)(iii)

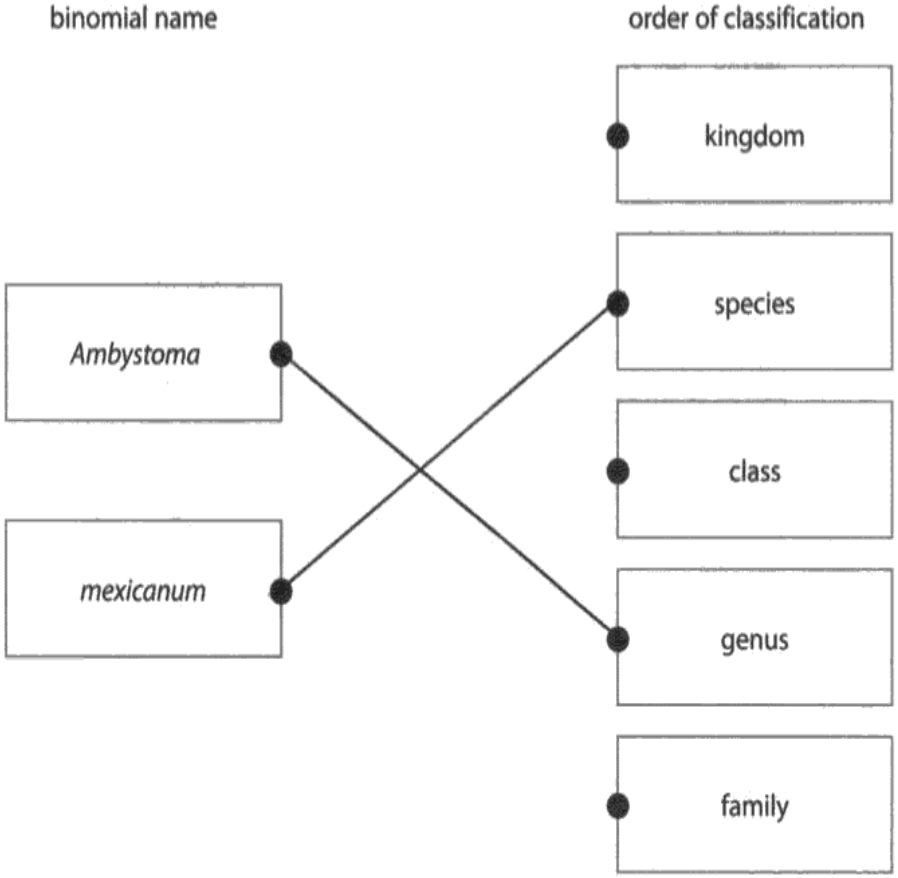
This question asked candidates to draw one line from each of the binomial names to the order of classification to which is it assigned. This was relatively well completed, with *Ambystoma* being the Genus name and *mexicanum* being the species name.

However, there are still many candidates drawing more than one line and therefore negating the answers they give.

(iii) The axolotl has the binomial name *Ambystoma mexicanum*.

Draw **two** straight lines to link the parts of the binomial name with the correct order of classification.

(2)



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This is exactly the response required. Two straight lines, drawn with a ruler which is helpful. These lines are both clear and unambiguous; easy to assign 2 marks.

Question 6(b)

This was our second six-mark question that focussed on the Kingdom area of classification and asked candidates to describe the main features of all of the five Kingdoms. The Animalia Kingdom was stipulated in the stem of the question and the other Kingdoms required were Plantae, Fungi, Prokaryotae and Protoctista.

The quality of written communication (QWC) was also assessed within this question. Level 1 banding required candidates to provide a limited description of just one kingdom in terms of the features that it has. Level 2 required a simple description of two or more kingdoms; a simple description in these terms was having more than one feature stated in one of the kingdoms chosen. Level 3 required a detailed description of at least four kingdoms. Any adequate QWC will allow the candidate to score the top mark in these levels assigned.

*(b) The axolotl belongs to Animalia which is one of the five kingdoms.

Describe the main characteristics of the five kingdoms of organisms.

(6)

There are five kingdoms, Plantae, animalia, fungi, Prokaryote, and Protoctist. The main characteristics on Plantae is that they contain chlorophyll, ~~have~~ have a cell wall and are multicellular, they are also autotrophs which means that they make their own food by using photosynthesis. Animalia, however, ~~A~~ does not have a cellwall or chlorophyll, but is multicellular and is heterotrophic (has to find it's own food). Fungi, again is ~~multi~~ multicellular with a cell wall, but has no chlorophyll and is ~~Sapr~~ Saprotrophic. ~~Prokaryote is~~ Contrasting to this Prokaryote and Protoctista are multicellular, Although Protoctista has a nucleus, whereas Protoctista doesn't.

(Total for Question 6 = 12 marks)

TOTAL FOR PAPER = 60 MARKS

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This candidate has scored the highest mark possible here by stating many features of all five of the Kingdoms. The Plantae kingdom was very well described, as too were the protoctista and prokaryotae as these are notoriously the more complex Kingdoms to describe. 6 marks awarded.

*(b) The axolotl belongs to Animalia which is one of the five kingdoms.

Describe the main characteristics of the five kingdoms of organisms.

(6)

Animalia are multicellular, have no cell walls or chlorophyll. Plantae ~~hav~~ are multicellular, have cell walls and chlorophyll. Fungi have cell walls but no chlorophyll and are multicellular. Protoctista are unicellular and have a nucleus. Prokaryotes are unicellular and have no nucleus.

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A very simply structured answer that allows the information to be communicated to the examiner in a clear and controlled manner. The candidate has stated many features of all five of the Kingdoms and therefore has successfully scored all 6 marks.

Summary

- It has been seen in this paper that the majority of candidates enjoyed answering the disease question; this may have been because it was at the beginning of the examination paper or because the question was ramped in a way that allowed the less able candidates to access right at the start of the paper. It is clear that the topics from this paper, and from recent research, are not written in any predictable way so candidates are expected to revise the whole range of topics ready for this examination in the future.
- Once again, the majority of candidates scored well on the multiple choice questions and the linking lines/other short answer style questions. These are designed with this in mind.
- The candidates scored less well on the 6 marker style questions and also the items where they had to make connections between different parts of biology and link various ideas together, such as the reduction in exercise due to smoking and the role of the liver in reducing blood glucose concentrations.
- However, on the whole, another successful series of scripts from candidates and a range of marks seen from the C grade down to G.

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