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Examiners' Report
January 2012

GCE Biology 6BI05 01

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Introduction

This paper offered a range of different question styles and it was pleasing to see many candidates showcasing an encouraging knowledge-base and understanding of the subject matter. Credit should go to both the candidates and their teachers for this.

Whilst some candidates' answers remain ambiguous or insufficently clear to award marks, it was heartening to see fewer such responses.

Question 1 (b) (i)

Most candidates recognised that a lack of visual stimulation limited development within the brain. A good number suggested a correct area within the brain. Likewise, the idea of a critical window was appreciated by many.

This response dealt with several elements as to why this type of treatment may be unsuccessful.

(b) The macula is the central part of the retina in the eye.
Macular degeneration is a common cause of blindness.

Recent research has shown that macular degeneration in adult mice can be successfully treated. This involves injecting embryonic stem cell-derived photoreceptors into their retinas.

(i) Suggest why this sort of treatment might not restore vision in people with macular problems who have been blind from an early age.

(3)

People blind from an early age wouldn't have recieved visual stimulation in the critical period of development of the nervous system and the ~~re~~ axons from the eye didnt send impulses to the visual cortex so these inactive synapses are destroyed. Treatment of ~~with~~ this sort does not benefit them because there are no active synapses from their retinal cells and the visual cortex of the brain.

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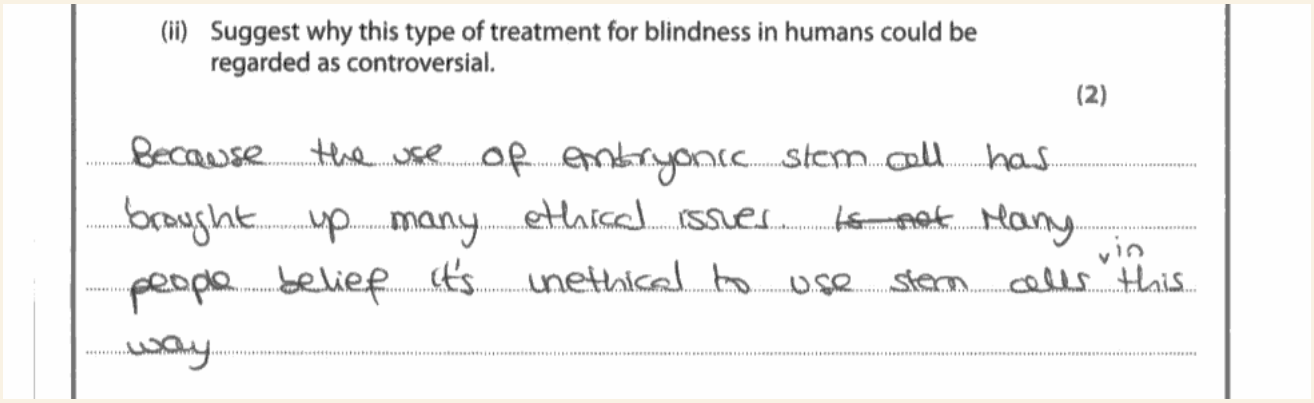
Examiner Comments

It was sufficiently clear to achieve full marks.

Question 1 (b) (ii)

Many candidates displayed a good appreciation of the use of an embryo to supply the stem cells and the first two mark points were the most commonly seen.

This response is typical of a number seen.



(ii) Suggest why this type of treatment for blindness in humans could be regarded as controversial.

(2)

Because the use of embryonic stem cell has brought up many ethical issues. ~~is not~~ Many people belief it's unethical to use stem cells in this way

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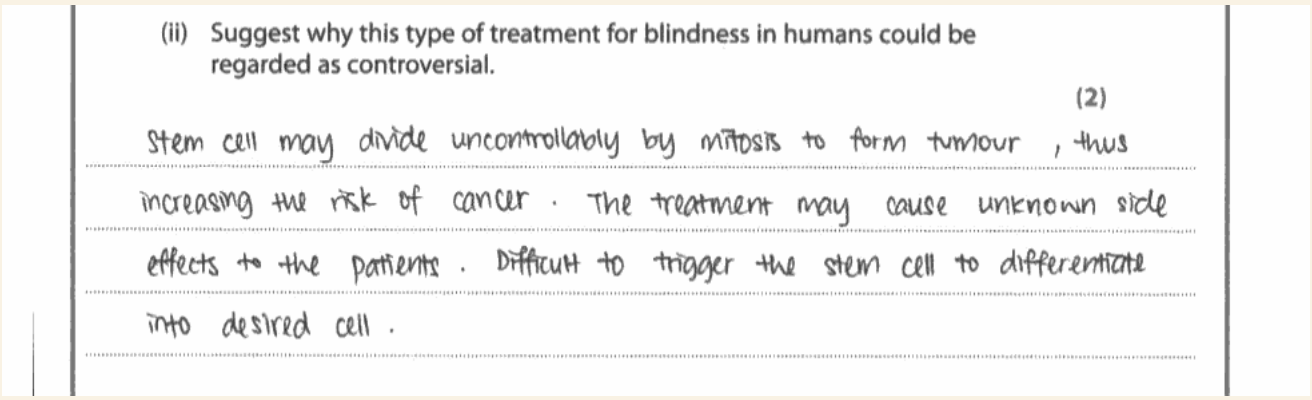
Examiner Comments

The candidate achieved marking points 1 and 2.

This response illustrates an alternative mark point.



(ii) Suggest why this type of treatment for blindness in humans could be regarded as controversial.

(2)

Stem cell may divide uncontrollably by mitosis to form tumour, thus increasing the risk of cancer. The treatment may cause unknown side effects to the patients. Difficult to trigger the stem cell to differentiate into desired cell.

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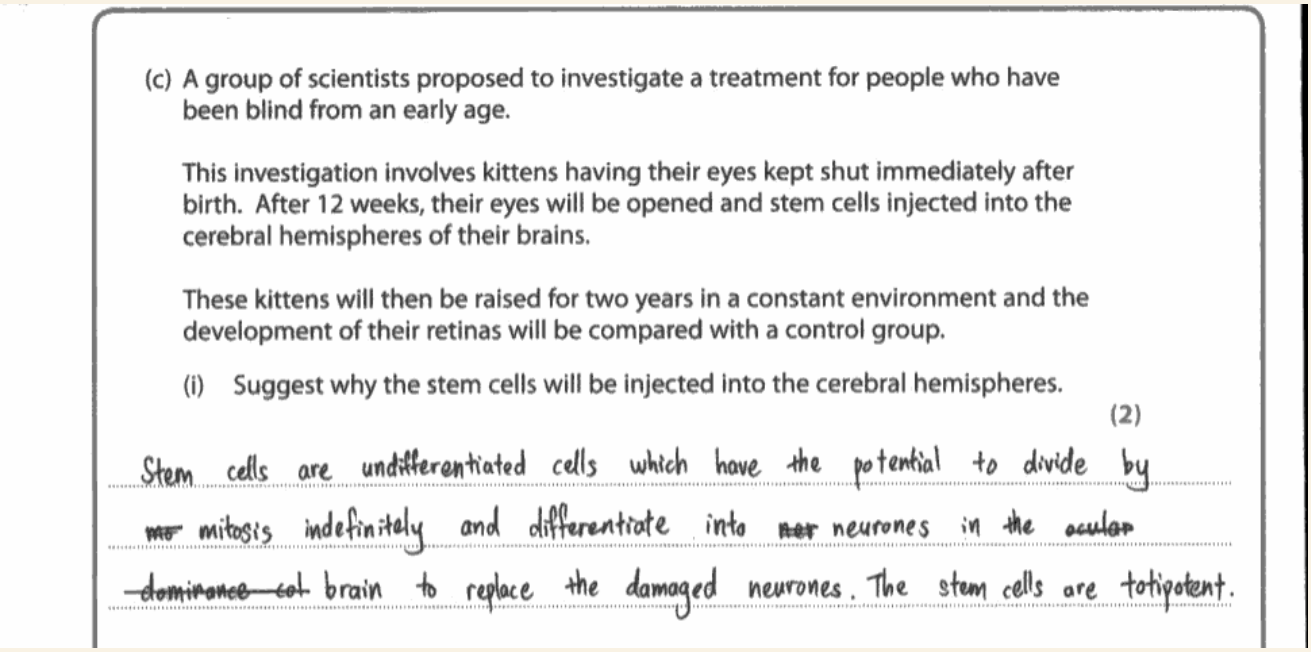
Examiner Comments

Marking point 4 has been achieved.

Question 1 (c) (i)

An encouraging number of candidates tackled this item in a clear and logical manner but most focused on the importance of the cerebral hemispheres i.e. marking points 1 and 2.

This response focused on a different aspect - the stem cells.



(c) A group of scientists proposed to investigate a treatment for people who have been blind from an early age.

This investigation involves kittens having their eyes kept shut immediately after birth. After 12 weeks, their eyes will be opened and stem cells injected into the cerebral hemispheres of their brains.

These kittens will then be raised for two years in a constant environment and the development of their retinas will be compared with a control group.

(i) Suggest why the stem cells will be injected into the cerebral hemispheres.

(2)

Stem cells are undifferentiated cells which have the potential to divide by ~~no~~ mitosis indefinitely and differentiate into ~~ner~~ neurones in the ~~ocular~~ ~~dominance col~~ brain to replace the damaged neurones. The stem cells are totipotent.

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Examiner Comments

This answer gained marking point 3 but a reference to synapses or connections was needed for marking point 4.

Question 1 (c) (ii)

This question item related to the reduction of various variables impinging on the investigation and how, by keeping them constant, the effect of the treatment could be assessed. It was not uncommon to see marking point 2 awarded but marking point 1 was less frequently encountered.

Question 2 (a)

This question item enabled a pleasing number of candidates to offer comprehensive and thorough responses. A number of technical terms were present and their spelling was important.

A sound candidate response.

2 Florence (Flo-Jo) Griffith-Joyner's world record of 10.49 seconds for the 100 m women's sprint in 1988 is unbeaten.

In this short time, a sprinter such as Flo-Jo could not deliver enough oxygen to her muscles to maintain aerobic respiration.

* (a) Describe how a sprinter is able to release sufficient energy for the 100 m sprint without having enough oxygen available for her muscles.

(6)

Sprinter has higher percentage of fast twitch muscle fibres in which these muscle fibres rely on anaerobic respiration to provide ATP. Anaerobic respiration can generate ATP fairly faster. Glucose will be converted into pyruvate in process called glycolysis and 2 reduced ~~NAD~~ NAD and 2 ATP molecules will be produced. Pyruvate will ~~decarboxylated into ethanal and then ethanol is reduced into ethanol~~ reduced into lactate while reduced NAD is oxidized into oxidized NAD. Regeneration of oxidized NAD allows glycolysis to continue to generate ATP. When these ATP are hydrolysed, large amount of energy will be released.

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Examiner Comments

Full marks awarded.

This example includes a reference to creatine phosphate.

In this short time, a sprinter such as Flo-Jo could not deliver enough oxygen to her muscles to maintain aerobic respiration.

* (a) Describe how a sprinter is able to release sufficient energy for the 100 m sprint without having enough oxygen available for her muscles.

(6)

A sprinter will have a larger proportion of fast twitch muscle fibres. These have high levels of creatine phosphate. The creatine phosphate releases energy ~~at the start~~ when she starts running. This energy is used to produce ATP to supply her with energy. Next, since her muscle cells do not get enough oxygen it carries out anaerobic respiration. The pyruvate obtained from glycolysis is ~~ox~~ reduced to lactate. This regenerates the NAD by oxidising the reduced NAD formed during glycolysis. Thus, glycolysis can continue, and form ATP. Hence, this partial breakdown of glucose supplies ATP to her muscles. Fast twitch muscle fibres also have a large glycogen content which supplies more glucose for glycolysis, to produce more pyruvate that can be reduced to lactate. With the oxygen that is available she can ~~cell~~ carry out a little aerobic respiration. Oxygen is the terminal acceptor of electrons and the oxidative phosphorylation process produces ATP which is ~~used~~ an energy source for the sprinter.

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Examiner Comments

Again 6 marks awarded.

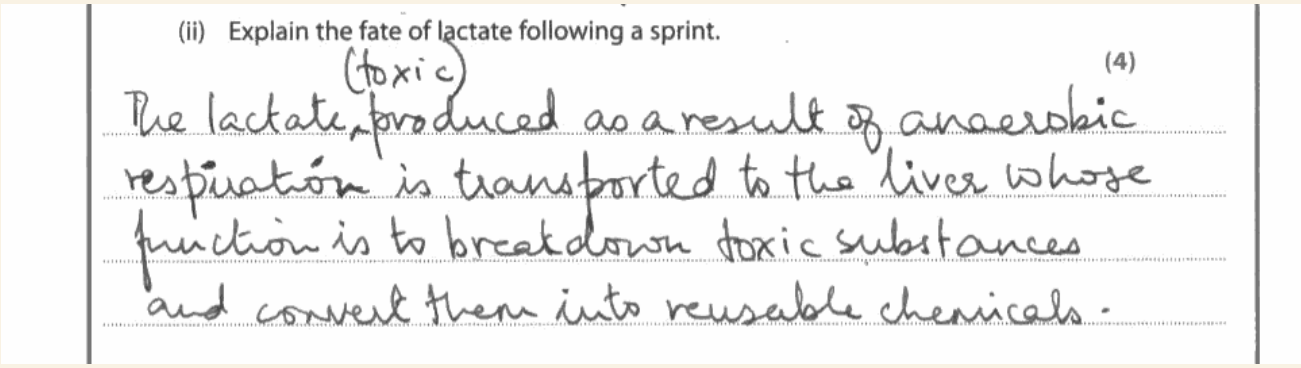
Question 2 (b) (i)

An encouraging number of candidates appreciated that the pH would drop and this could effect enzyme activity and therefore reduce glycolysis.

Question 2 (b) (ii)

There were a number of exemplary answers presented by candidates to this question item.

This answer focuses on marking points 1 and 2.



(ii) Explain the fate of lactate following a sprint. (4)

(toxic)

The lactate, produced as a result of anaerobic respiration is transported to the liver whose function is to breakdown toxic substances and convert them into reusable chemicals.

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Examiner Comments

In the answer, there is no reference to blood so only marking point 2 can be awarded.

A detailed response offering several mark points.

(ii) Explain the fate of lactate following a sprint. (4)

The lactate ~~will diffuse~~ from muscle cells will diffuse into the bloodstream and will be transported to the liver to be oxidised to pyruvate and the ~~ac~~ ~~oxid~~ NAD^+ will be converted to reduced NAD. The pyruvate and ~~the~~ reduced NAD will ~~be~~ diffuse into the matrix of the ~~mitochondria~~ mitochondria where it will be oxidised to carbon dioxide and water in the presence of oxygen. This is known as oxygen debt.

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Examiner Comments

Maximum marks awarded.

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Examiner Tip

Where there is a sequential process occuring, it is always best to write the answer in a logical manner.

Question 3 (a) (i)

Whilst some candidates gave good reasons why the table data could be considered reliable, it was not uncommon to read answers that focused on repeating the data. Further, a number chose not to comment on the standard deviation data.

This example concentrates on the standard deviation.

3 The table below shows information about the top ten fastest men and women in both the 100 m sprint and the marathon race of 42.2 km.

Race	Mean speed / $m\,s^{-1}$	Standard deviation
Men's 100 m sprint	10.22	0.10
Women's 100 m sprint	9.35	0.08
Men's marathon	5.65	0.02
Women's marathon	5.06	0.05

(a) (i) Give reasons why the data in the table may be considered to be reliable.

(2)

The standard deviation ~~in the~~ of the data is all low and no more than 0.10, which means the chance of errors within data range is low.

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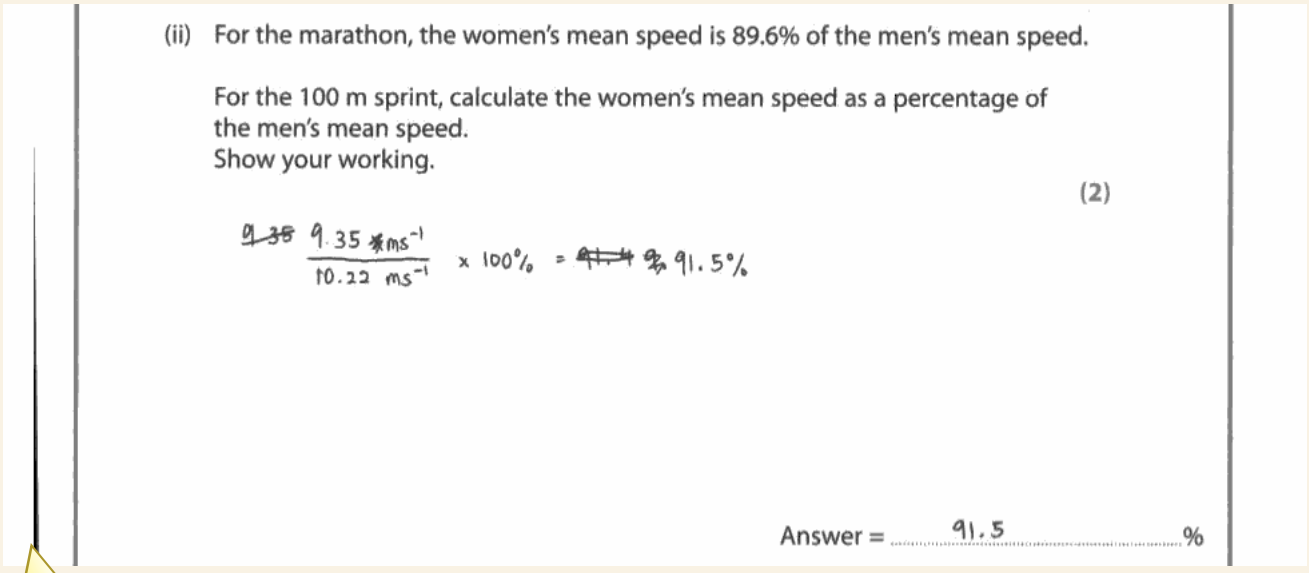
Examiner Comments

It was awarded mp3 only.

Question 3 (a) (ii)

Many candidates took this calculation well within their stride and achieved both marks.

This response was typical of many.



(ii) For the marathon, the women's mean speed is 89.6% of the men's mean speed.

For the 100 m sprint, calculate the women's mean speed as a percentage of the men's mean speed.
Show your working.

(2)

~~9.35~~ $\frac{9.35 \text{ ms}^{-1}}{10.22 \text{ ms}^{-1}} \times 100\% = 91.5\%$

Answer = 91.5 %

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Examiner Comments

Both marks were awarded.

ResultsPlus
Examiner Tip

How many decimal places should I give my calculated answer to? Be guided by the data presented. In this case, the women's mean speed is 89.6%.

Question 3 (a) (iii)

Most candidates used the data in the table effectively to describe the difference in speed. A few focused on repeating the data. Generally, sound reasons were offered.

This is a pleasing answer which includes both a structural and a physiological reason for the difference in sprinting speed.

(iii) Using the information in the table, describe the difference between the mean speeds for men and women for the 100 m sprint.
Suggest a reason for the difference.

(2)

• The mean speed for the men's 100 meters is 0.87 ms^{-1} faster than the ~~women~~ mean speed for women's 100 meters.
• This could be due to men having higher levels of testosterone. Testosterone promotes the growth of muscle allowing men to have more fast twitch muscle fibres on their legs.

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Examiner Comments

Both marks awarded.

Question 3 (b)

This item displayed the full mark range with some candidates delivering thorough and detailed answers including marking points 3 and 5. The most commonly quoted reasons related to the length of the race and the use of slow twitch fibres.

This example, like a number, could only be awarded 1 mark.

(b) Suggest why the mean speeds for the marathon are less than the 100 m sprint for both men and women.

(3)

Marathon involves long distances whereas compared to 100 m ~~spits~~ sprints. More energy is wasted on running marathons than the sprints. As a result the average speed decreases for marathons.

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Examiner Comments

Marking point 1 was achieved.

Question 4 (a) (i)

Most candidates recognised the significance of the difference between the general population risk and the risk in those with a close relative having OCD. A few offered appropriate genetics-related comments.

This response includes correctly manipulated numerical data. However, this proved problematic in some instances.

4 A study examined the risk of developing a mental disorder.
This study determined the risk for both the population as a whole and for those who had a close relative (parent, brother, sister or child) with the same disorder.

The results are shown in the table below.

Mental disorder	Risk of developing mental disorder (%)		
	Population as a whole		Those with a close relative with the same disorder
	Males	Females	
Alcoholism	7.0	2.0	15
Anxiety	3.0	6.0	15
Manic depression	2.0	3.0	15
Neurotic depression	6.0	12.0	11
Obsessive compulsive	0.1	0.1	10
Schizophrenia	1.0	1.0	10

(a) (i) People with obsessive compulsive disorder (OCD) have symptoms such as repeated washing, checking, touching, counting or arranging.

Using the data in this table, give the evidence that OCD is an inherited condition.

(2)

While the risk of getting OCD is only 0.1% in the population as a whole, it is 100% (1000 times greater) in those who have a relative with the disorder. There is a clear correlation between [redacted] having OCD and having a relative with OCD, suggesting that it is an inherited condition.

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Examiner Comments

This response includes the most common correct example of a manipulation of the figures. Also 9.9% high was regularly seen.

The repeating of the information, as seen in this example, was seen on a number of occasions.

4 A study examined the risk of developing a mental disorder.
This study determined the risk for both the population as a whole and for those who had a close relative (parent, brother, sister or child) with the same disorder.

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(a) (i) People with obsessive compulsive disorder (OCD) have symptoms such as repeated washing, checking, touching, counting or arranging.

Using the data in this table, give the evidence that OCD is an inherited condition.

(2)

10% ~~of~~ risk of developing mental disorder if the person have a close relative with the same disorder. The ~~least difference~~ risk of developing mental disorder same between males and females.

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Examiner Comments

No marks could be awarded.

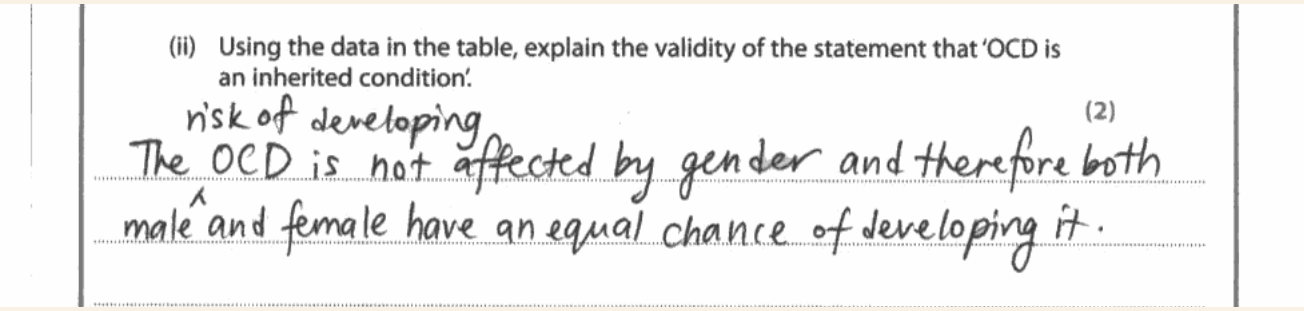
ResultsPlus
Examiner Tip

Do not simply repeat data already presented.

Question 4 (a) (ii)

A range of responses was seen for this question item. Some candidates recognised that the statement may not have been valid and then explained that the 10% of people at risk if their close relative had OCD, should have been higher.

Several candidates focused on the gender figures, as did this answer.



(ii) Using the data in the table, explain the validity of the statement that 'OCD is an inherited condition'.

(2)

risk of developing
The OCD is not affected by gender and therefore both male and female have an equal chance of developing it.

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Examiner Comments

No marks can be awarded for this answer.

Question 4 (a) (iii)

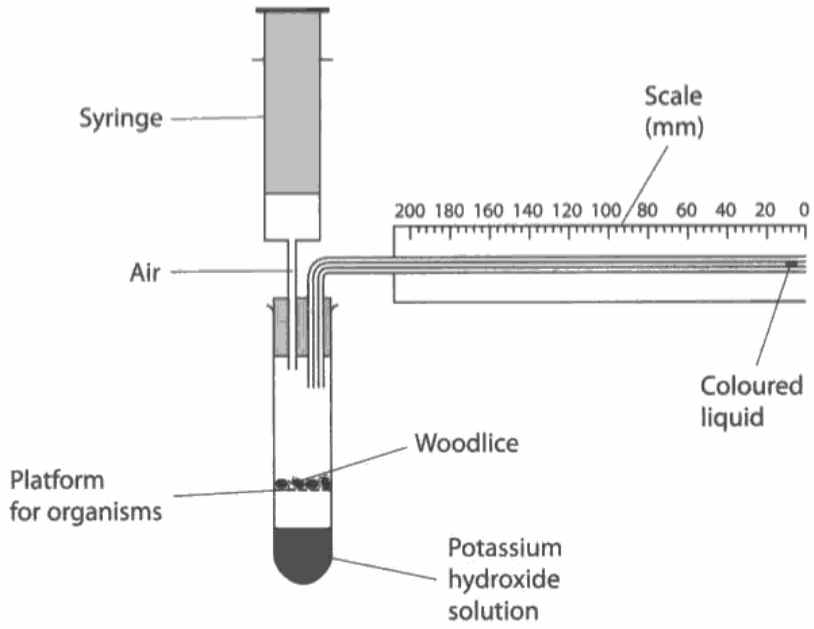
Most candidates successfully selected the correct disorder. However, some considered the difference in the risk for males and females in the population as a whole rather than linking to close relative data.

Question 5 (a) (i)

Candidates generally showed they had a good grasp of the importance of absorbing carbon dioxide in this apparatus.

This is a clear answer relating to measurement of oxygen uptake.

5 The apparatus shown in the diagram below can be used to measure the rate of respiration of small animals such as woodlice.



(a) (i) Potassium hydroxide solution absorbs carbon dioxide.
Suggest a reason for absorbing carbon dioxide in this apparatus.

(1)

Carbon dioxide is absorbed so that oxygen intake by the woodlice can be measured, if carbon dioxide was left in test tube the volume of air wouldnt change.

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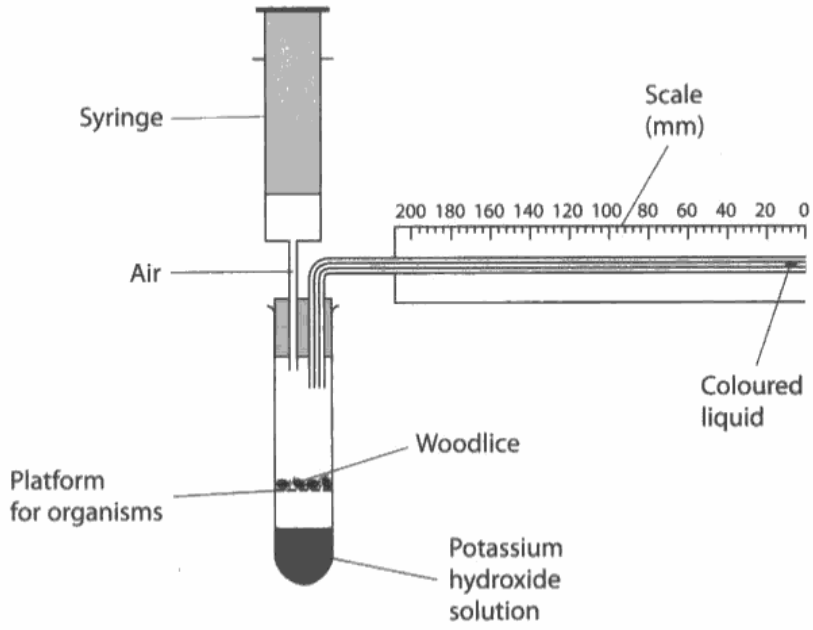
Examiner Comments

Marking point 2 awarded.

This is a rather too general answer.

5 The apparatus shown in the diagram below can be used to measure the rate of respiration of small animals such as woodlice.



(a) (i) Potassium hydroxide solution absorbs carbon dioxide.
Suggest a reason for absorbing carbon dioxide in this apparatus.

(1)

So it doesn't alter the results of the experiment by contributing to the scale.

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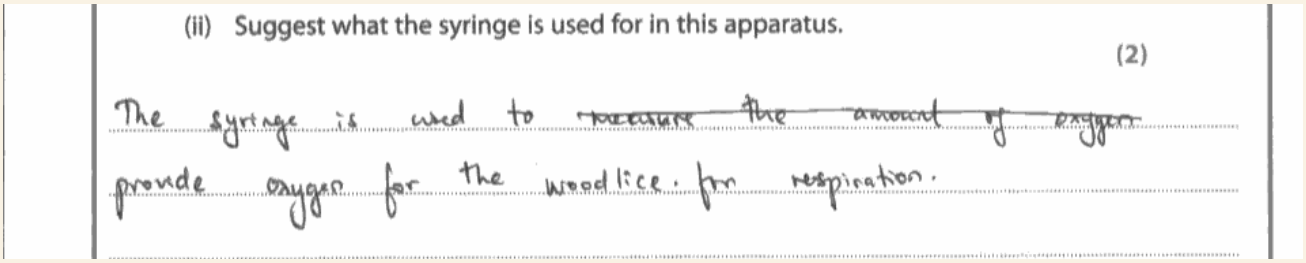
No marks could be awarded here.

Question 5 (a) (ii)

It was heartening to see that many candidates had a clear appreciation of the role of the syringe.

This example illustrates a common view held by some candidates.


(ii) Suggest what the syringe is used for in this apparatus.

(2)

The syringe is used to ~~measure the amount of oxygen~~ provide oxygen for the woodlice. for respiration.

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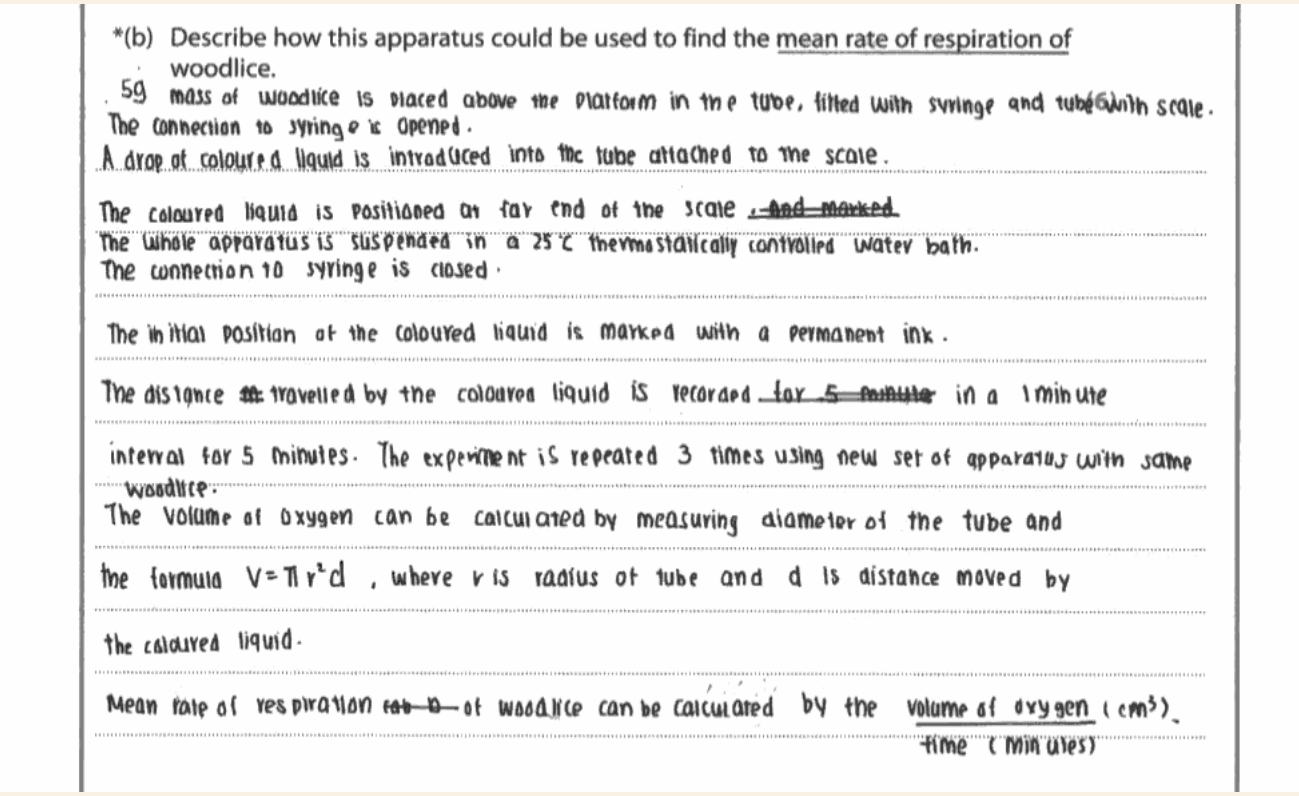
No marks could be awarded for this response.

Question 5 (b)

This item elicited the full mark range. It enabled some candidates to demonstrate excellent knowledge relating to this core practical.

This is a detailed and thorough answer written in a logical and sequential manner.



*(b) Describe how this apparatus could be used to find the mean rate of respiration of woodlice.

5g mass of woodlice is placed above the platform in the tube, fitted with syringe and tube with scale. The connection to syringe is opened. A drop of coloured liquid is introduced into the tube attached to the scale.

The coloured liquid is positioned at far end of the scale ~~, and marked~~

The whole apparatus is suspended in a 25°C thermostatically controlled water bath. The connection to syringe is closed.

The initial position of the coloured liquid is marked with a permanent ink.

The distance ~~it~~ travelled by the coloured liquid is recorded ~~for 5 minute~~ in a 1 minute interval for 5 minutes. The experiment is repeated 3 times using new set of apparatus with same woodlice.

The volume of oxygen can be calculated by measuring diameter of the tube and the formula $V = \pi r^2 d$, where r is radius of tube and d is distance moved by the coloured liquid.

Mean rate of respiration ~~of~~ of woodlice can be calculated by the $\frac{\text{volume of oxygen } (cm^3)}{\text{time (minutes)}}$

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This achieves maximum marks and in fact offered more than 6 credit worthy points.

Question 7 (a)

Most candidates tackled this question item well and gained both marks. However, only a few gave marking point 3.

This example illustrates one of the alternative descriptions acceptable for marking point one.

7 In an investigation into dieting and obesity, mice were fed a restricted quantity of food. It has been found that the stress of having less food causes the release of the hormone noradrenaline. This causes the mice to hunt for food.
These food-restricted mice will tolerate electric shocks in order to eat.

(a) Suggest why this investigation might be regarded as unacceptable.

(2)

The mice are being electricuted and getting hurt. This is animal cruelity and it is unethical.

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Marking points 1 and 2 awarded here.

A typical answer which gained both marks.

(a) Suggest why this investigation might be regarded as unacceptable.

(2)

Some people believe it is unethical to cause stress to any living organism.
Some people believe animals have the right not to be tested on.
Some people believe testing on animals won't give reliable results

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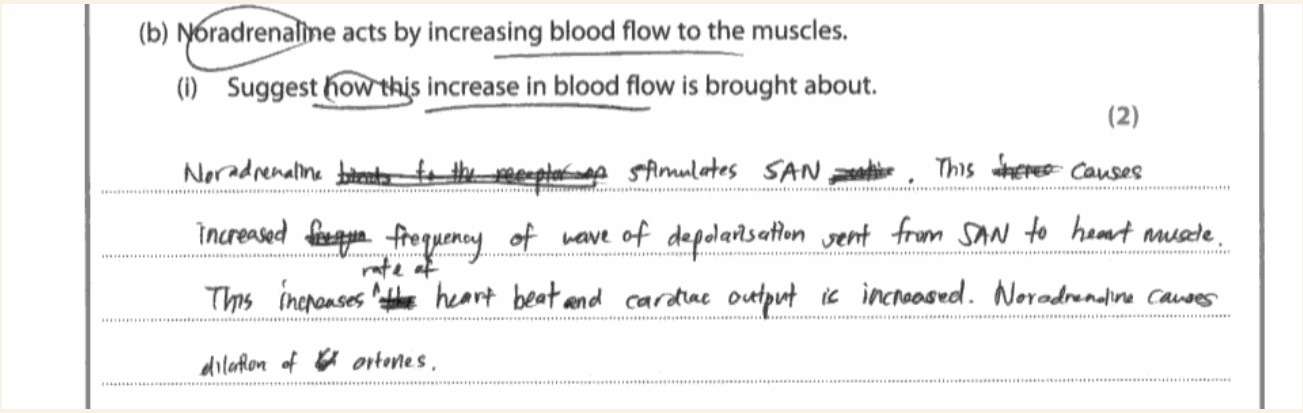
Marking points 1 and 2 successfully achieved.

Question 7 (b) (i)

Whilst a good number of candidates dealt with this item well, it was not uncommon to see references to capillaries and veins vasodilating.

This example offered a variety of correct elements.


(b) Noradrenaline acts by increasing blood flow to the muscles.

(i) Suggest how this increase in blood flow is brought about.

(2)

Noradrenaline ~~binds to the receptor on~~ stimulates SAN ~~cells~~. This ~~increases~~ causes increased ~~freqn~~ frequency of wave of depolarisation sent from SAN to heart muscle. This increases ~~the~~ rate of heart beat and cardiac output is increased. Noradrenaline causes dilation of ~~bl~~ arteries.

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Full marks awarded.

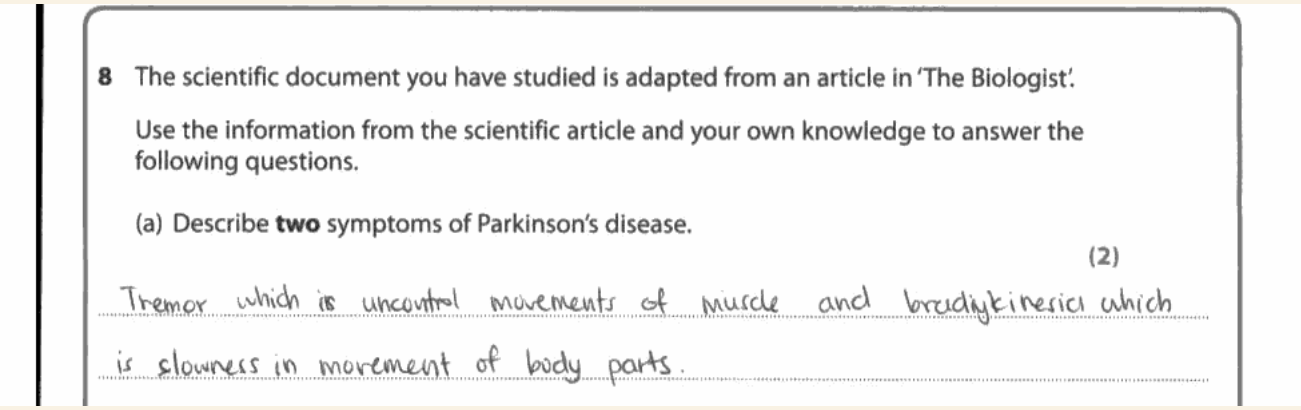
Question 7 (b) (ii)

Many good answers were seen for this question item but the emphasis is on increased blood flow, so more glucose or more oxygen is being supplied.

Question 8 (a)

Most candidates were able to offer two correct symptoms of Parkinson's disease.

This answer illustrates two of the four most commonly offered symptoms. The other two frequently supplied symptoms were muscle rigidity (mp 1) and postural instability (mp 4).



8 The scientific document you have studied is adapted from an article in 'The Biologist'.

Use the information from the scientific article and your own knowledge to answer the following questions.

(a) Describe **two** symptoms of Parkinson's disease.

(2)

Tremor which is uncontrol movements of muscle and bradykinesici which is slowness in movement of body parts.

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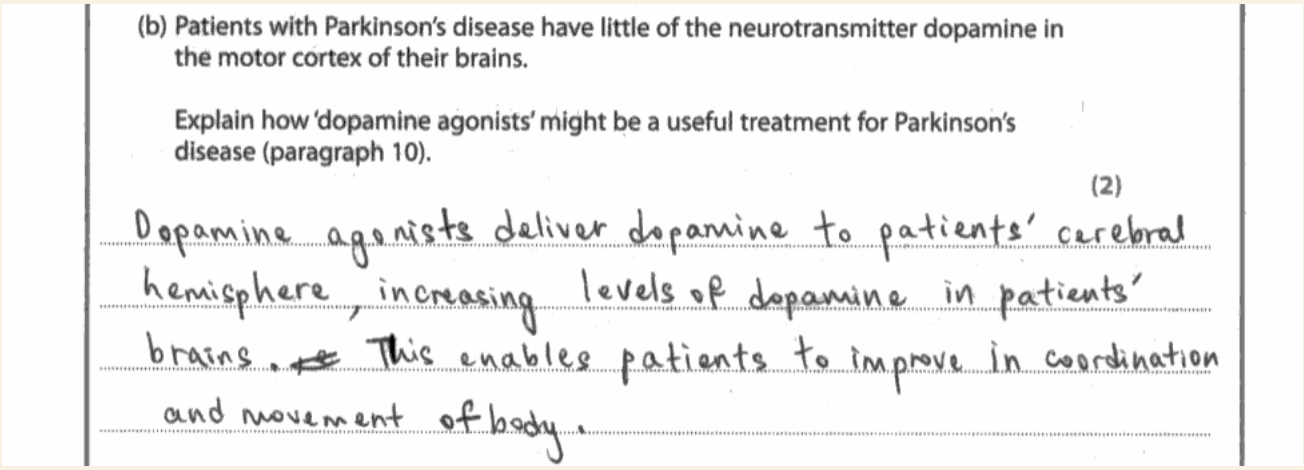
Two marks awarded as marking points 2 and 3 correctly given.

Question 8 (b)

Whilst a majority of candidates presented a sound explanation of how dopamine agonists work, some were rather general in nature. A significant minority wrote about L-Dopa.

This example illustrates an incorrect approach taken by some candidates.



(b) Patients with Parkinson's disease have little of the neurotransmitter dopamine in the motor cortex of their brains.

Explain how 'dopamine agonists' might be a useful treatment for Parkinson's disease (paragraph 10).

(2)

Dopamine agonists deliver dopamine to patients' cerebral hemisphere, increasing levels of dopamine in patients' brains. This enables patients to improve in coordination and movement of body.

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Examiner Comments

No marks could be awarded for this answer.

This candidate has given a clear and full answer to the question item.

(b) Patients with Parkinson's disease have little of the neurotransmitter dopamine in the motor cortex of their brains.

Explain how 'dopamine agonists' might be a useful treatment for Parkinson's disease (paragraph 10).

(2)

Dopamine agonists mimic the dopamine in brain to bind to the receptor of complementary at the post-synaptic membrane to trigger action potential. It has similar shape to natural Dopamine. It reduces the symptoms of disease without healing it.

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Examiner Comments

The reference to binding to complementary receptors on the post-synaptic membrane was a marking point 2 equivalent.

Question 8 (c)

This item was generally tackled well by candidates. It was not uncommon for answers to begin with a reference to dopamine not being about to enter the brain from the bloodstream.

A sound answer that refers to crossing the blood brain barrier as a suitable alternative for marking point 1.

(c) Dopamine is not given to the patients as it is not effective. However, the precursor L-Dopa (levadopa) can be given to patients.

Suggest why L-Dopa might be a useful treatment for patients with Parkinson's disease.

(3)

L-Dopa, unlike dopamine, can be transported past the blood brain barrier into the brain. There it is converted to dopamine by dopa decarboxylase. This increases the quantity of dopamine in the brain which relieves the symptoms of Parkinson. People with Parkinson don't manufacture enough dopamine in the brain.

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In addition to gaining marking point 1, marking points 2 and 4 were present. All three marks were achieved.

Question 8 (d)

All marking points were offered but the full mark range was seen for this item with some candidates descriptions being most impressive indeed. Some focused only on one advantage, though more than one was asked for.

The response offered here supplies one of the three most commonly awarded mark points.

(d) Describe the advantages of deep brain stimulation (DBS) to patients with Parkinson's disease who do not respond to treatment with drugs.

(3)

DBS targets specific part of brain. So, the effect will be immediate and take lesser time to treat the patients.

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Examiner Comments

Marking point 4 can be given in this answer.

This example shows the other two most commonly awarded mark points.

(d) Describe the advantages of deep brain stimulation (DBS) to patients with Parkinson's disease who do not respond to treatment with drugs.

(3)

It allows the patients to manage some of the symptoms and therefore help to improve their quality of life. It can allow them to take a less harsh medication regime. Can allow for a decrease in medication. Can help people lead a more normal life. Its good for the patients.

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Examiner Comments

The candidate has correctly referred to marking points 1 and 6.

Question 8 (e)

It was pleasing to see that many candidates gave good suggestions for the usefulness of the 'stereotactic frame' in DBS. It was, however, quite rare to see marking point 3.

Question 8 (f)

Whilst there were some most impressive responses given by candidates to this question item, many did not focus on how the cell membranes of brain cells were affected by DBS. This is illustrated in the example below.

This answer did not really consider the affect at the cell membrane level.

(f) Suggest how DBS affects the cell membranes of brain cells (paragraph 22).

(3)

DBS inhibits certain ~~ee~~ brain cells from working and does not damage them ~~affecting~~ meaning it has a reversible effect so its ~~not~~ permanent. It allows other brain cells to transmit electrical impulses by adjusting the stimulation.

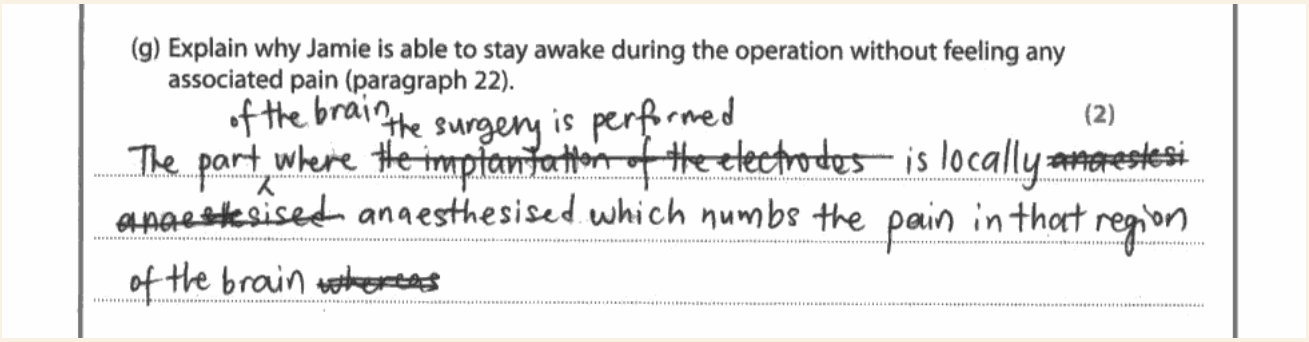
ResultsPlus
Examiner Comments

No marks could be awarded here.

Question 8 (g)

Most candidates gained one mark, either offering marking point 1 or 2. However, it was not uncommon to see answers that referred to the local anaesthetic being used inside the brain.

The answer offered here refers to the local anaesthetic being used within the brain.


(g) Explain why Jamie is able to stay awake during the operation without feeling any associated pain (paragraph 22).

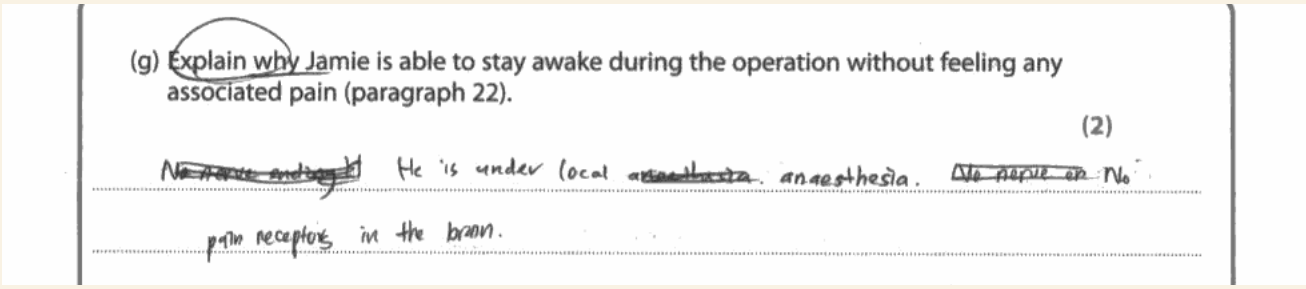
(2)

of the brain the surgery is performed
The part where ~~the implantation of the electrodes~~ is locally ~~anaestesi~~
~~anaesthesised~~ anaesthesised which numbs the pain in that region
of the brain ~~whereas~~

ResultsPlus
Examiner Comments

Marking point 2 was not awarded.

This short answer correctly considers marking points 1 and 2.


(g) Explain why Jamie is able to stay awake during the operation without feeling any associated pain (paragraph 22).

(2)

~~No nerve endings~~ He is under local ~~anaesthesia~~. anaesthesia. ~~No nerve or~~ No
pain receptors in the brain.

ResultsPlus
Examiner Comments

Both marks awarded.

Question 8 (h)

The majority of candidates offered creditworthy responses to this question item.

This answer describes the advantage of being conscious during the operation.

(h) Suggest the advantage of Jamie being conscious during the operation.

(1)

Feedback is able to be given from Jamie if he is conscious for optimal placement. The neurosurgeon is also able to obtain direct subjective reports on effects of the stimulation.

ResultsPlus
Examiner Comments

Mark awarded.

Question 8 (i)

Whilst good answers were supplied by many candidates, some were rather general.

The first sentence elicited no marks but introduced the neurotoxin. The second sentence then offered a good accompanying explanation.

(i) Explain how the experimental model for Parkinson's disease in monkeys was created (paragraphs 54 to 56).

(2)

They ~~excited~~ found out that a neurotoxine that was been injected into the monkeys, rendered them parkinsonian. As it selectively destroyed dopaminergic neurones in the ~~substantia~~ substantia nigra, which created Parkinson's symptoms.

ResultsPlus
Examiner Comments

Marking points 1 and 2 awarded for this answer.

Question 8 (j)

Some candidates relished this item and supplied clear and considered answers. Others found it quite challenging and the full mark range was seen.

This thoughtful answer recognised that one of the established sites for treating Parkinson's disease is the internal segment of the globus pallidus (table 1) whilst the question relates to the external segment.

(j) The subthalamic nucleus and the external segment of the globus pallidus (Table 1, paragraph 62) are connected to each other.

Suggest why this might be relevant for the DBS treatment of Parkinson's disease.

(2)

Established sites for DBS in treating Parkinson's include the STN and the internal segment of the Globus pallidus. The external segment may yield another site for Parkinson's or become a site that aids in treatment of another disorder.

ResultsPlus
Examiner Comments

This answer gains one mark as it has achieved marking point 1.

ResultsPlus
Examiner Tip

Always read the question and associated information carefully.

Question 8 (k)

The full mark range was also seen in this item and candidate understanding of how fMRI can be used to monitor brain activity varied.

This answer illustrates the most commonly achieved marking point.

(k) Describe how fMRI can be used to monitor the activity of different areas of the brain (paragraph 62).

(3)

fMRI measures the oxygen uptake of the brain. Different areas of the brain are used when conducting exercises or looking at images. It is possible to measure oxygen uptake and relate that to amounts of activity in an area of the brain.

ResultsPlus
Examiner Comments

Marking point 2 awarded.

Question 8 (l)

Most candidates were able to relate the speed of fMRI to the rapid, transient nature of the effects of DBS.

This clear explanation offers the two most common marks awarded.

Explain why this is unlikely to monitor the effects of DBS (paragraph 62).

(2)

DBS affects neural activity in the brain. Neural changes in the brain happen over milliseconds, which is too fast to be detected using fMRI. So the changes in neural activity caused by DBS will have already occurred before the fMRI can detect them.

ResultsPlus
Examiner Comments

Marking points 2 and 3 achieved.

Question 8 (m)

This item was generally tackled soundly by candidates and the full mark range was seen.

This example illustrates the most typical type of response seen.

(m) Explain what is meant by the phrase 'placebo responders' (paragraph 64).

(2)

individuals who have received a placebo ~~which does not contain any real effect but~~ yet showed ~~an positive response~~ improved in the disease treated because ~~of the~~ it is ~~an~~ a psychological effect because they believed that they were going to get better as they were receiving 'treatment'.

ResultsPlus
Examiner Comments

One mark awarded - marking point 1

Question 8 (n)

The responses to this item was variable. Some candidates clearly had a thorough undertstanding of causal whilst others did not. A few tried to define casual.

Paper Summary

It was most gratifying to see many candidates not only demonstrating good knowledge and understanding of unit 5 material and an ability to apply their knowledge in unfamiliar situations, but also across all units. Further, it was pleasing to see many candidates displaying a good appreciation of the article.

In order for candidates to improve their performance, they should:

i) Always read the question stem carefully;

ii) Make sure they have a firm grasp of the command words;

iii) Not focus only on repeating data already already given.

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