edexcel
advancing learning, changing lives

Examiners' Report
January 2010

GCE Biology 6BI07

Helping you to raise attainment

www.resultsplus.edexcel.com

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

A PEARSON COMPANY

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 GCE line on 0844 576 0025, our GCSE team on 0844 576 0027, 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/

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

ResultsPlus is our unique performance improvement service for you and your students.

It helps you to:

- **Raise attainment** - by providing in-depth analysis of where your class did well and not so well, enabling you to identify areas to focus on/make improvements.
- **Spot performance trends** at a glance by accessing one-click reports. You can even choose to compare your cohort's performance against other schools throughout the UK.
- **Personalise your students' learning** by reviewing how each student performed, by question and paper you can use the detailed analysis to shape future learning.
- **Meet the needs of your students on results day** by having immediate visibility of their exam performance at your fingertips to advise on results.

To find out more about ResultsPlus and for a demonstration visit
http://resultsplus.edexcel.org.uk/home

January 2010

Publications Code USO22646

6BI07 Enhance Examiners' Report January 2010

Maximum mark	40
Mean mark	20.9
Standard deviation	6.7

General Comments

This was the second of these 'alternative to coursework' papers for international centres and it was pleasing to see that many candidates had obviously both taken part in the required practical work and thought about the research skills needed for Question 2. However, it was also very noticeable that a large number of others had clearly not done the practicals, or at least the one which was examined this time. In other cases they had not thought much about research skills; data presentation, the necessity to keep within the data given when drawing conclusions and where information can be obtained. A lack of precision in answers often lost candidates a mark which just a little more detail would have given them.

Question 1 It is often said that those candidates who have done the required practical work always do better in questions about that work. It is not possible, of course, for examiners to know whether this is actually the case but what they can see is that candidates tend to fall in to two categories on such questions, doing either very well or rather badly!

Q1a (i) This was badly done with a lot of evidence of candidates not having done the experiment and therefore making up suggestions. The clear deficiency with the method given is that there are a numbers of ways in which it would not be a 'fair test'. The mass of plant material needs to be thought about, as does the volume and concentration of the extractant (ethanol). A minority of candidates were able to easily get the two marks.

(a) (i) The two plant extracts were prepared using the following method.

Some plant material was crushed and shaken with ethanol. Suggest **two** improvements that could be made to this method.

(2)

1 The ~~plant material~~ volume of plant material should be specified e.g 1g and the concentration of ethanol should be known.

2 The plant extract ~~can be extracted by mixing the plant material and ethanol in a mixer/blender and then filtered~~ can be filtered after mixing to prevent pieces of plant material from interfering with the result.

ResultsPlus
Examiner Comments

In this example both points are made under "1.", this is not a problem, the marks will be awarded, the numbers were to help candidates

~~(a) (i)~~ The two plant extracts were prepared using the following method.

Some plant material was crushed and shaken with ethanol. Suggest **two** improvements that could be made to this method.

(2)

1 Incubate the mixture of plant material with ethanol for a few days as to allow all the active compounds such as flavoids to be ~~attracted or~~ extracted out by the alcohol from the plant material ~~itself.~~

2 The beaker ~~containg~~ containing the plant extracts should be covered fitly or neatly by aluminium foil as ethanol is a very volatile liquid.

ResultsPlus
Examiner Comments

This example shows a candidate who is surely not thinking about a piece of work they had actually done! There were no marks for this.

Q1a (ii) This question produced some very high scores with more detail than was needed for full marks often being given.

Describe how you would prepare an agar plate that would produce this result, using a sterile Petri dish, sterile nutrient agar, a pure culture of a suitable bacterium in a bottle and some garlic extract.

(5)

- first, add a pure culture of a suitable bacterium in a bottle with the sterile nutrient agar which is already molten.
- After that, pour the molten nutrient agar into the sterile Petri dish, do not open the ~~lid~~ lid completely. Open the lid for 45° just enough to pour the nutrient agar.
- Leave ~~at~~ the sterile Petri dish on working bench for 20 minutes to allow it to solidify.
- After that, use a paper disc and ~~immersed~~ immersed with some garlic extract.
- Place the paper disc on the surface of the agar.
- Use four piece of cellophane tape to tape around the lid.
- Inverted the petri dish and incubate for 24 hours for 30°c.
- Measure the diameter of the clear zone.

ResultsPlus
Examiner Comments

This answer gained a maximum five marks by noting that the agar needs to be poured into the dish, an aseptic technique was described (the restricted dish opening). The garlic was placed on correctly and two valid points about incubation temperature and time were made.

(5)

Sterilise the working surface with ethanol and conduct experiment near a Bunsen burner flame. Using a sterilised syringa, ~~extract~~ measure $1cm^3$ of bacterium culture using aseptic technique. Without allowing the syringe or the cover of bacterium culture bottle to touch the working surface, transfer the bacterium culture into the Petri dish. Using the same aseptic technique, pour molten nutrient agar into the Petri dish until it is approximately 5mm in height. Replace the cover of the Petri dish. Gently swirl the Petri dish to mix the nutrient agar with the bacteria culture. Add a few drops of garlic extract onto a filter paper disc. Using a pair of forceps, gently place the disc onto the surface of solidified nutrient agar in the Petri dish. Seal the four corners of the Petri dish with tape and incubate ~~it~~ it for 24 hours at 30°c.

ResultsPlus

Examiner Comments

This answer actually gets 8 of the marking points with 2 descriptions of aseptic technique (bench wiping and Bunsen flame), agar pouring, mixing of bacteria with agar, placing of extract on disc, sealing the dish with tape (4 corners was allowed for not fully sealed) and two relevant points about incubation.

bacterium in a bottle and some garlic extract.

(5)

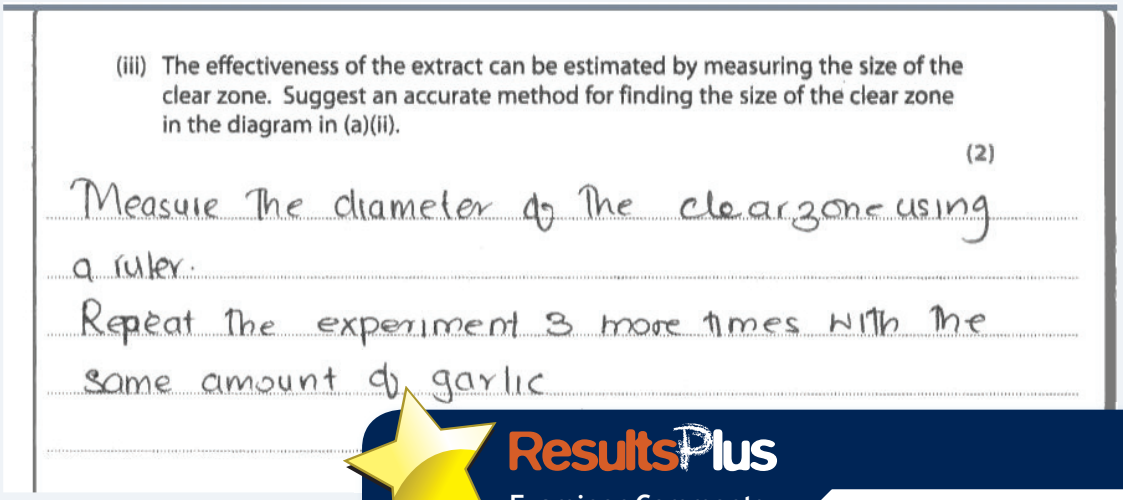
Take a piece of garlic. Prefer to use the white part of the garlic. Crush the garlic extract and add some ethanol. Take the sterile Petri-dish and add the bacteria in it. The bacteria are in the agar solution. The agar solution is full of nutrients so the bacteria will grow. Then add the garlic extract in the middle of the petri dish. Leave for some time and then examine the result. You can measure the diameter of the circle that is present around the garlic extract. You can perform the experiment with different amounts of garlic to see how different concentrations of garlic clean more or less amount of bacteria. If some bacteria are killed and a clear zone is present, this means that the garlic extract has some antibacterial properties

ResultsPlus
Examiner Comments

On the other hand this answer, although clearly extensive gains no marks. The first three lines are irrelevant as the garlic extract is supplied in the stem of the question. The statement that the bacteria are in the nutrient agar makes no sense as the stem clearly implies they are not (they are provided separately). The agar (with or without bacteria) are never poured into the Petri dish so when it is said 'add the garlic extract in the middle of the Petri dish' this would mean that some extract (not on filter paper) is placed in an empty plastic dish. The remaining half of the answer is irrelevant to the question asked.

Q1a (iii) This question most often gained one mark for a measurement of the average diameter of the clear zone. There were no marks for a simple measurement of diameter as the clear zone is obviously not circular so this would be inaccurate.

The original intention of the mark scheme was that the method would involve tracing the irregular shape onto graph paper and then counting squares but it was decided that as long as a number of 'diameters' were measured and then this was used to calculate an area, that would suffice. Very few thought to subtract the known area of the filter paper disc (or well) from the result obtained.



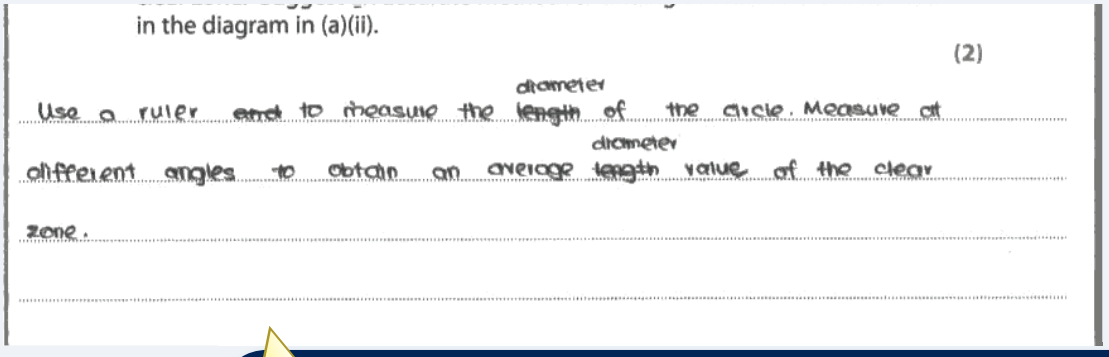
(iii) The effectiveness of the extract can be estimated by measuring the size of the clear zone. Suggest an accurate method for finding the size of the clear zone in the diagram in (a)(ii).

(2)

Measure the diameter of the clear zone using a ruler.
Repeat the experiment 3 more times with the same amount of garlic

ResultsPlus
Examiner Comments

This was quite a common error where, although there has been repetition, it is of the experiment, not the measurement of diameter, and this is not relevant to the question. This answer gained no marks.



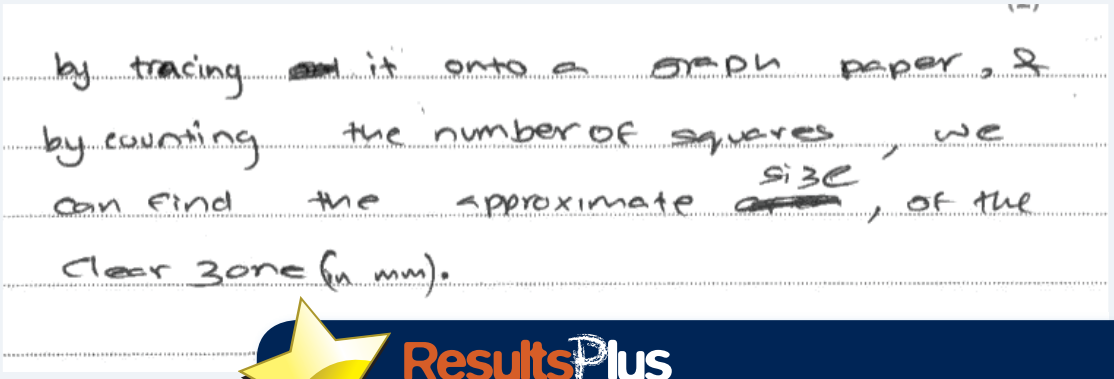
in the diagram in (a)(ii).

(2)

Use a ruler ~~and~~ to measure the ~~length~~ diameter of the circle. Measure at different ~~angles~~ diameter to obtain an average ~~length~~ value of the clear zone.

ResultsPlus
Examiner Comments

This was a typical answer for one mark but the second mark (for using the average diameter reading to get area) was not given.



ResultsPlus
Examiner Comments

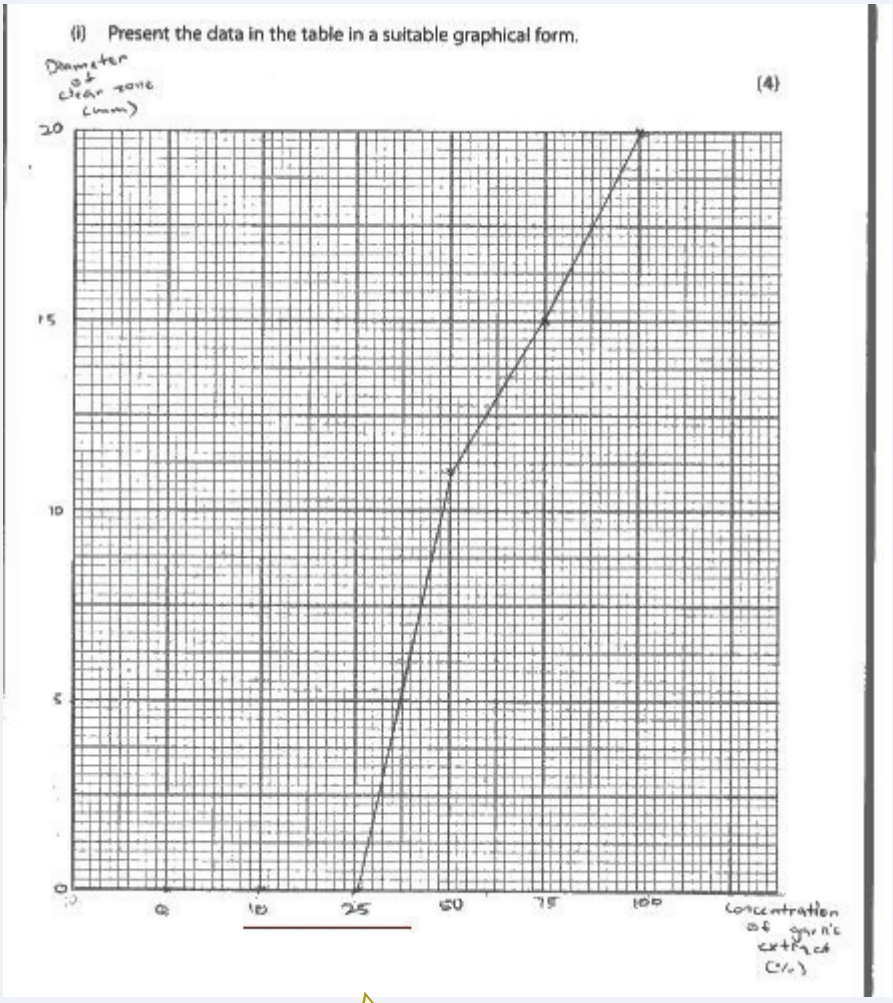
This simple but correct explanation gains two marks, despite the fact that the filter paper area should be subtracted as this was a third alternative marking point.

1b(i) and (ii) The graph plotting exercise proved easy for most with few bar charts (which could get maximum 3) or axes the wrong way round. After these two errors the most common was the omission of units from the X and Y axes. Plots were usually accurate and most candidates drew either a line of best fit through the three points which showed anti-bacterial activity (i.e. above a concentration of 25%) or joined points dot to dot with a ruler. Either was accepted.

In 1b (ii) marks were lost for either not discussing anything other than the simple idea that increasing concentration of extract gave a greater effect or for misquoting the concentration value, from the candidates own graph, at which an effect could be inferred. A good number of candidates also lost marks for discussing the size of clear areas rather than the extent of the anti-bacterial effect, which is what was asked for.

(i) Present the data in the table in a suitable graphical form.

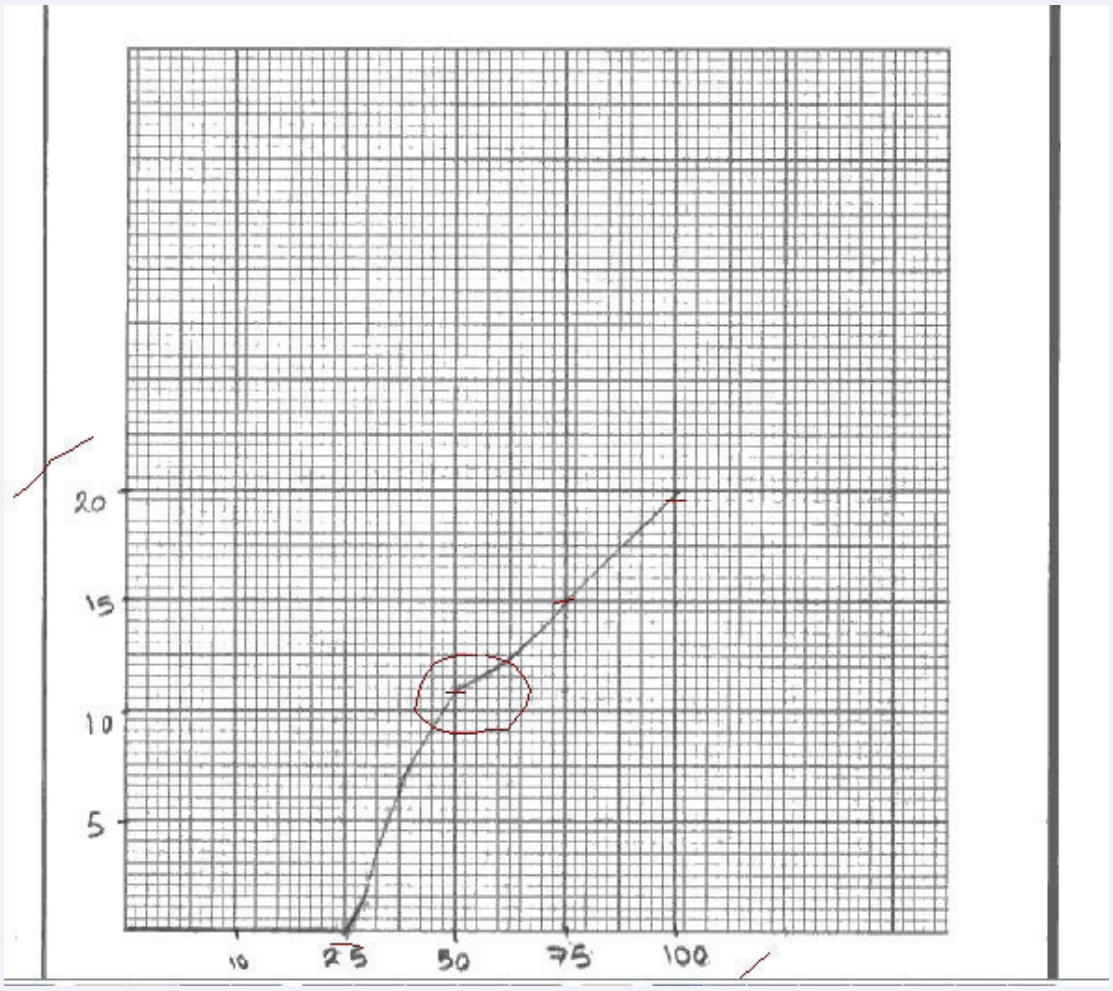
(4)



ResultsPlus

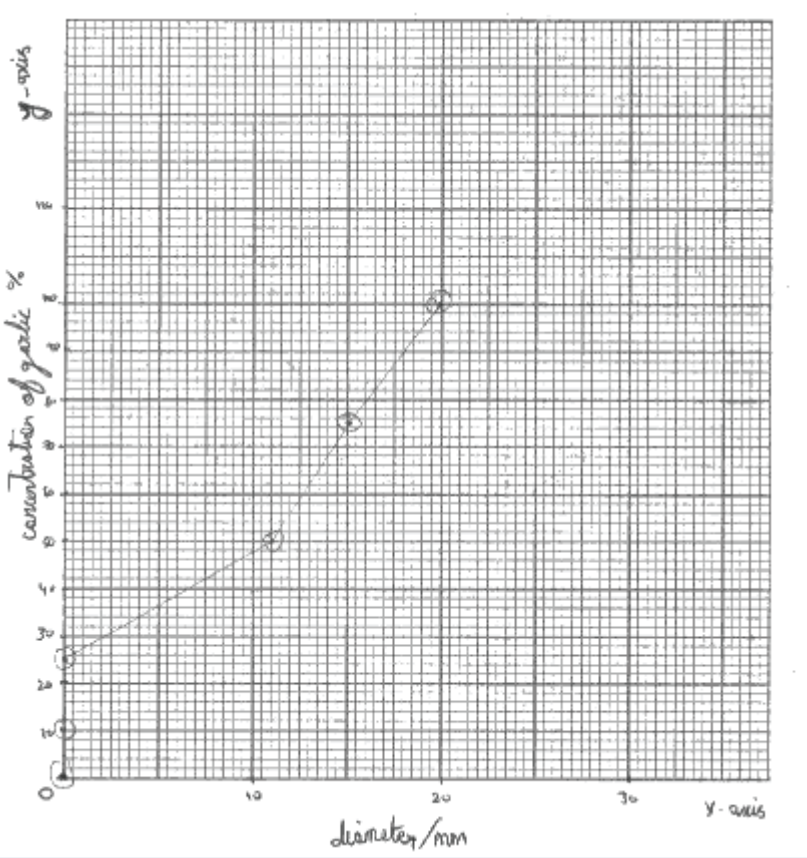
Examiner Comments

A well presented graph which has good use of the graph paper, fully labelled axes and accurate plotting with a suitable line drawn.



ResultsPlus
Examiner Comments

A poor answer which only gained one mark for the plotting. The axes are not labelled (which loses the first two marking points), which would have been very easy to do, and the line is drawn freehand which is unacceptable for dot to dot.

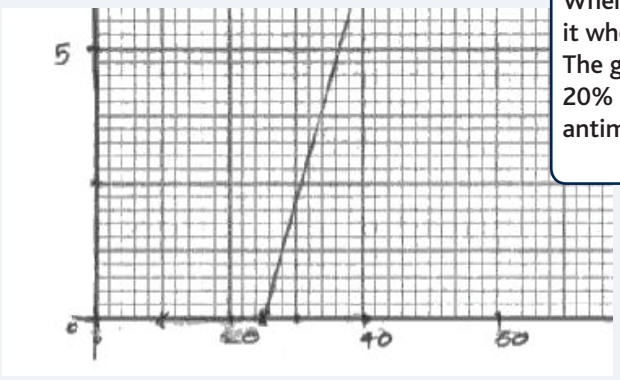


ResultsPlus

Examiner Tip

In this graph the axes are the wrong way round, which means marking point one cannot be awarded. A good idea when deciding which way round to put the axes is to make each possibility into a sentence. 'The size of the clear area depends on the concentration of garlic extract' implies size on the Y axis (dependent variable) and concentration on the X (independent variable), and makes sense. The sentence 'the concentration of the garlic extract depends on the size of the clear area' simply does make any sense.

When the concentration of garlic extract increase, its antimicrobial effect too increases. (directly proportionality) There is sudden increase in antimicrobial effect from 20% to 50%. & then it slightly decreases from 50% to 100%.



ResultsPlus
Examiner Tip

When describing a graph make sure you are looking at it when you write. The pair here does not go together. The graph clearly shows the effect starting at over 20% concentration, whereas the answer states that the antimicrobial effect (starts) at 20%! The mark is lost.

(ii) What do these results suggest about the relationship between the concentration of garlic extract and its antibacterial effects?

(2)

Garlic concentration does ~~decrease the~~ increase the ∮ clear zone in the agar plate, but at garlic concentration of ~~0-20~~ 0-25 the clear zone remains 0 due to no effect. ~~of~~ After adding concentration above 25 of about 50° the clear zone becomes 11 mm.

ResultsPlus
Examiner Tip

The most common piece of advice given to candidates is 'read the question'. This answer gets zero because it talks all the time about clear zones, when the questions asks about antibacterial effect.

Q1c (i) This is a very simple question but some thought is needed. Apart from miscalculation, the commonest error was to write 25.25. The question asked for the table to be completed so the answer needed to be in the style of the table, ie. no places of decimals

19	29	22	14	18
20	28	10	13	25
Mean	**26**	**16**	**14**	25.25

Q1c (ii) This question was well done, the most common errors being to write something non-comparative between garlic extract and the others and to state that chloramphenicol was better (or words to that effect) than garlic extract. Candidates should be able to make judgements about the significance of a result, even though they are not formally introduced to inferential statistics until A2. Thus, a difference of only 1 mm out of 25 should be judged as a slight difference only or nearly the same.

(ii) Compare the antibacterial effect of garlic extract with that of the three antibiotics.

(2)

The higest ~~of~~ antibacterial activity is antibiotic chloramphenicol as diameter of clear zone is 26mm. While the lowest ~~a~~ ~~rs~~ ~~t~~ value is ~~tetr~~ 14 mm using ~~at~~ antibiotic, Streptomycin.

ResultsPlus
Examiner Comments

There is nothing in this answer which does what the questions asks, i.e. to compare garlic with the others. Garlic is never mentioned in the answer!

(ii) Compare the antibacterial effect of garlic extract with that of the three antibiotics.

(2)

The antibacterial effect of garlic extract is stronger than that of Tetracycline and Streptomycin.

However, the antibacterial effect of garlic extract is slightly weaker than that of Chloramphenicol.

ResultsPlus
Examiner Comments

This is straightforward 2 mark answer.

(ii) Compare the antibacterial effect of garlic extract with that of the three antibiotics.

(2)

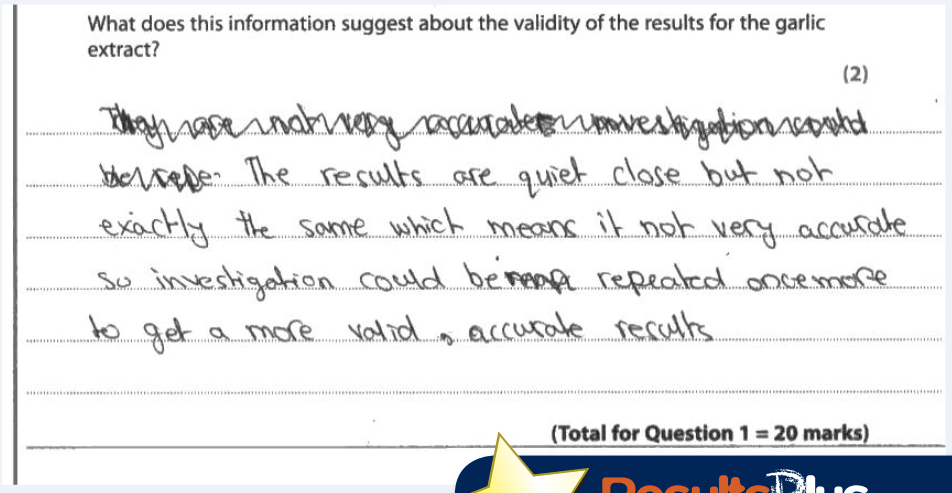
~~The mean diameter of the clear zone for the garlic extract is greater compared to the antibiotics, tetracycline and streptomycin but lower than chloramphenicol.~~ There is a greater mean clear zone between garlic and streptomycin and smaller difference in clear zone between garlic and Tetracycline ~~chloramphenicol~~. However, the mean clear zone for Chloramphenicol is greater than that of garlic

ResultsPlus
Examiner Comments

This answer gets no marks as it is entirely about clear zones again. It is possible that through this simple mis-reading or misinterpretation of a question a candidate could lose up to 4 marks.

Q1d HSW requires amongst other things, an appreciation of the usage in science of a number of important terms. One of these is validity. This term has at least two contexts in A level, the validity of data and that of conclusions. It is an understanding of the second of these which this question was designed to examine.

The main problem candidates had with this question was their confusion of the term with others in this category most especially accuracy and reliability. The examples below illustrate these points.



What does this information suggest about the validity of the results for the garlic extract?

(2)

They are not very accurate. An investigation could be repeated. The results are quiet close but not exactly the same which means it not very accurate so investigation could be repeated once more to get a more valid, accurate results

(Total for Question 1 = 20 marks)

ResultsPlus
Examiner Comments

If this answer had suggested that the lack of exact agreement between the results contributed to a questioning of the validity of those for garlic it would have got the mark. The lack of agreement might have been due to inaccuracy in measurement in either case (garlic or onion). This idea could have been developed to suggest a reason for a lack of validity but that would not have answered the question. Neither do the suggestions about how to obtain more valid (accurate) results address the question asked. In addition, repeating would not improve accuracy or reliability so the suggestions would not work anyway!

What does this information suggest about the validity of the results for the garlic extract?

(2)

The results are not accurate since there is a big difference in the mean diameter of clear zone of garlic extract and onion extract.

ResultsPlus
Examiner Comments

'The results are not accurate and therefore not valid' would make sense, but there is no evidence within what has been provided that the results are not accurate, again the candidate does not understand the meaning of this word.

What does this information suggest about the validity of the results for the garlic extract?

(2)

Results for garlic extract is valid. Garlic has a similar mean diameter of clear zone as onions. ~~this is proof~~

The fact that garlic and onion are closely related suggests a similar mean diameter of clear zone which justifies the validity of the results.

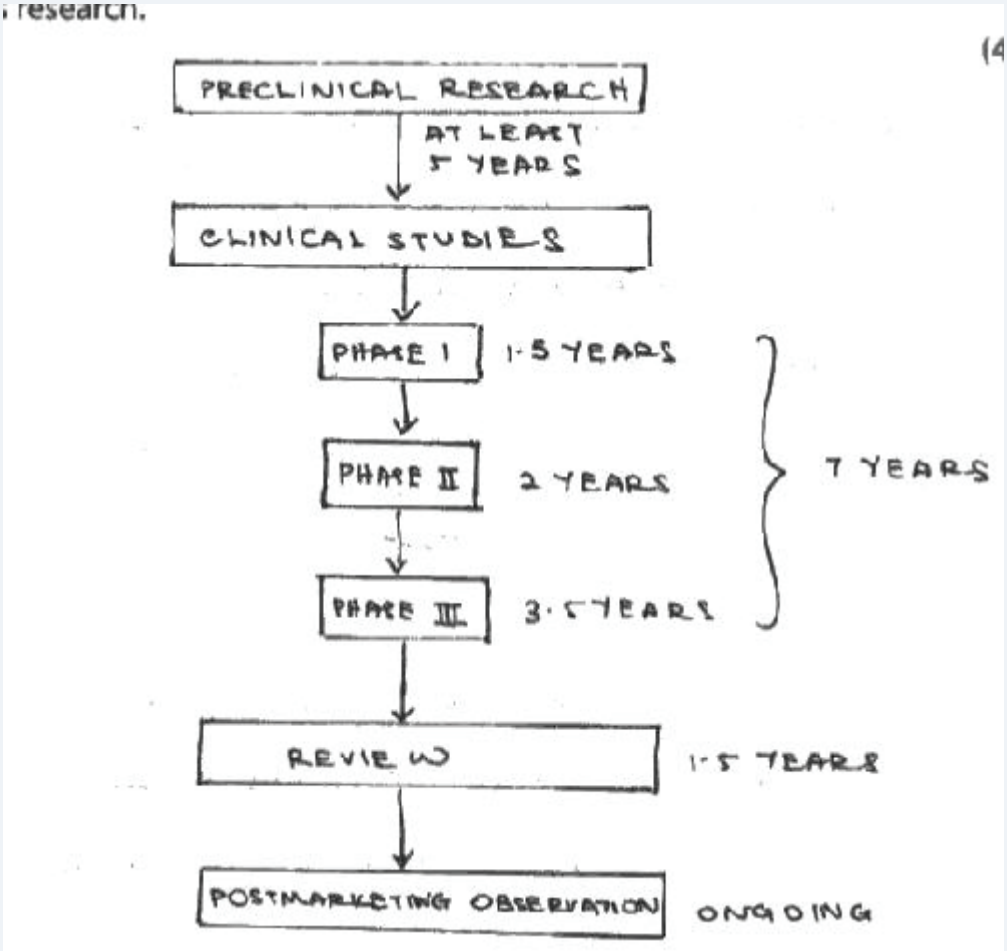
ResultsPlus
Examiner Comments

This is straightforward 2 mark answer.

Question 2

In this second of these passage questions candidates were generally able to show their ability to interpret given information and discuss its significance and improvement. Look at the criteria for the UK unit 3 on page 80 of the specification because it is these that are being examined here.

Q2a (i) A disappointingly large minority of candidates did not understand what they had to do here and simply copied out the modern drug trialling diagram. Another group had no difficultly in getting all four marks.

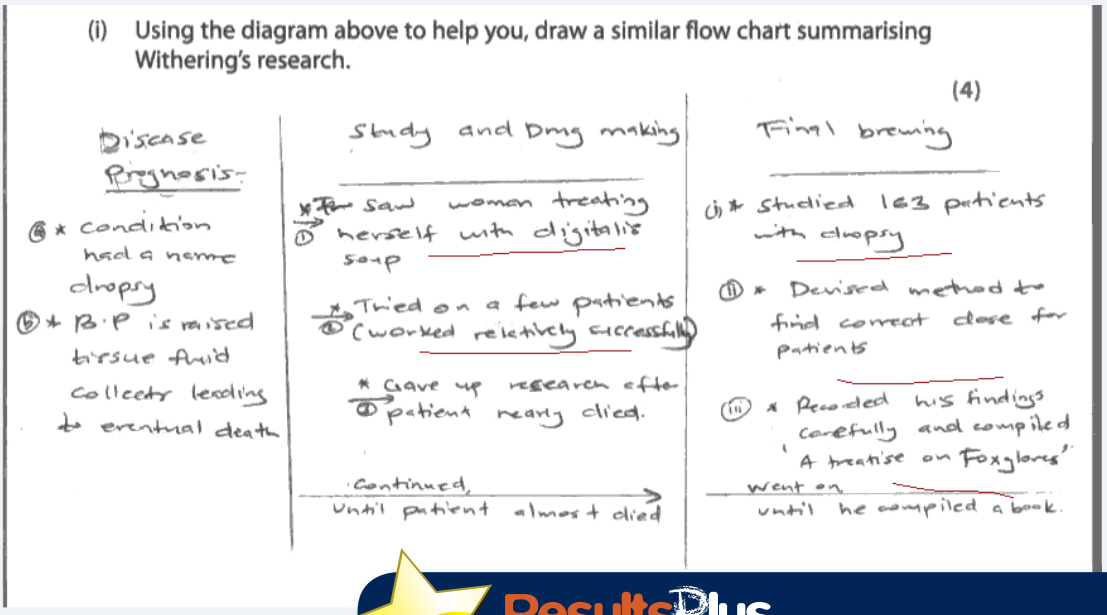


ResultsPlus
Examiner Comments

This answer shows no understanding of what was required.

(i) Using the diagram above to help you, draw a similar flow chart summarising Withering's research.

(4)



ResultsPlus
Examiner Comments

This answer achieves all four marks, although it is to be noted it is not really a flow chart as asked for.

Q2a (ii) There was some evidence in the answers to this question that a worryingly large number of candidates did not understand what an economic implication is. Again, teachers are urged to draw the attention of candidates to the UK unit 3 criteria as the types of implications which need to be considered are clearly listed there.

(ii) Discuss **one** economic implication of modern drug trialling, compared with Withering's methods.

(2)

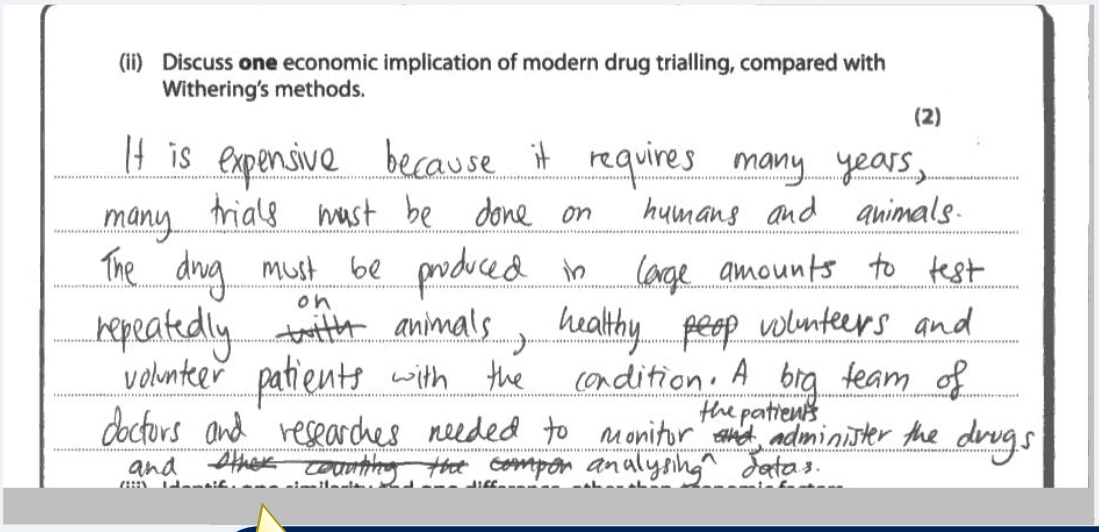
Modern drug trialling has ~~much more sources~~ safer way to ~~test on~~ carry out the ~~resa~~ research whereas Withering's method caused some deaths during the research.

ResultsPlus
Examiner Comments

This answer does not get anywhere with the idea of economic implications. It could have by linking the safety of modern trialling to increased cost.

ResultsPlus
Examiner Tip

Although examiners were quite lenient candidates are urged to avoid the use of the word it where there is any doubt as to what 'it' might.



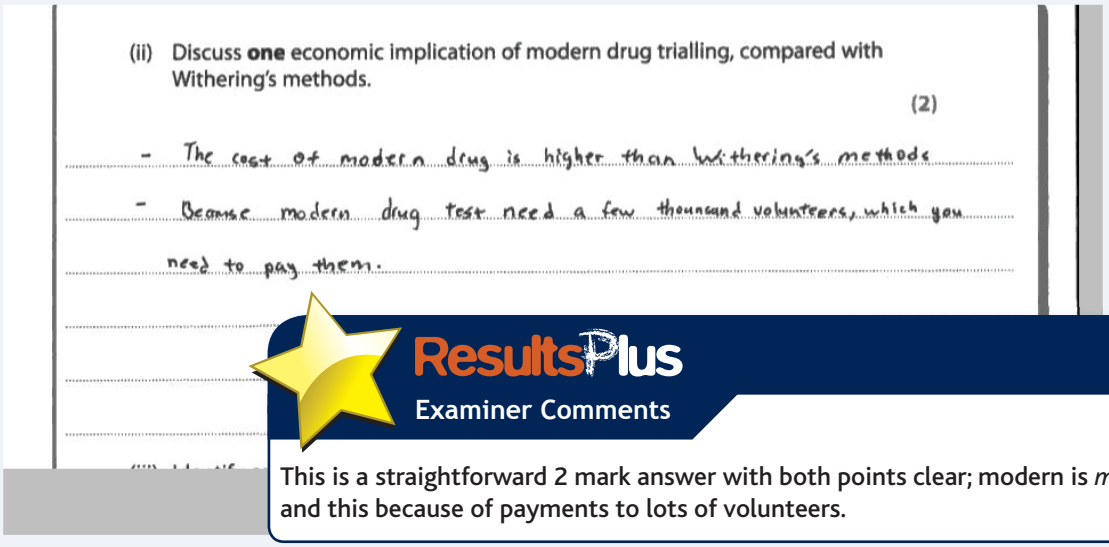
(ii) Discuss **one** economic implication of modern drug trialling, compared with Withering's methods.

(2)

It is expensive because it requires many years, many trials must be done on humans and animals. The drug must be produced in large amounts to test repeatedly ~~with~~ on animals, healthy ~~peop~~ volunteers and volunteer patients with the condition. A big team of doctors and researches needed to monitor ~~and~~ the patients, administer the drugs and ~~other counting the compon~~ analysing data.

ResultsPlus
Examiner Comments

This answer gained both marks for the idea that it (it was assumed that it was modern trialling) is expensive (although again it would have been better if it had said more expensive). The second mark came for the idea of it taking longer, although other valid points were made.



(ii) Discuss **one** economic implication of modern drug trialling, compared with Withering's methods.

(2)

- The cost of modern drug is higher than Withering's methods
- Because modern drug test need a few thousand volunteers, which you need to pay them.

ResultsPlus
Examiner Comments

This is a straightforward 2 mark answer with both points clear; modern is *more* expensive and this because of payments to lots of volunteers.

Q2a (iii) Some candidates were defeated by similarity and difference. In many cases good examples were given for 2 marks, but the explanation was inadequate for the second mark in each case.

Similarity Drugs are tested on humans.

Explanation The real effects of drug will only be shown by testing on humans.

Difference Modern drug trial has pre-clinical research while Withering's drug trial ~~does~~ did not have it.

Explanation Drugs should be tested on animals ~~before~~ to make sure it is safe to be taken by human and will not cause any devastating side effects.

ResultsPlus
Examiner Comments

This answer is not detailed but gains all 4 marks with a relevant similarity, the idea that all drugs need to be tested on the organisms they are intended to be used on, Withering and nowadays do that. Then the idea of animal testing to assess general safety/lack of worrying side effects before first human trials.

Similarity Animal testing on withering's drug trial and modern trial

Explanation which ~~the~~ both trial are all testing for the general ~~safty~~ safety.

Difference Phase 1.

Explanation ~~F~~ In withering's drug trial allows people to volenteer for the trial.

ResultsPlus
Examiner Comments

Go through past papers etc. and make sure you understand common English words like similarity, difference, compare, contrast, outline etc. which come up a lot in questions. This candidate wrote down a difference as a similarity.

Q2b (i) This question was quite high scoring for most. The main problem, candidates had was when they strayed outside the information given and discussed LDLs, HDLs, atheroma etc.

(i) Using all the information in Figures 1, 2 and 3, evaluate the benefits and risks to humans of lowering blood cholesterol with statins.

There will be up to 2 marks awarded for the quality of spelling, punctuation and grammar and the use of technical terms in your answer to this question.

(6)

Statins benefit those who are suffering from ~~cort~~ ~~Cardio-V~~ Coronary Vascular Diseases (CVD). Statins help to lower ~~that b~~ cholesterol levels and threfore reduces the number of deaths from CVD. However, there are side effects when ~~taking~~ consuming Statins. Statins cause a lot of muscle problems to ~~t~~ those who are ~~y~~ taking it to lower their cholesterol levels. ~~There~~ Most complains have been ~~a~~ due to general muscle problems and the least amount of complains were about hands / arms muscle problems.

ResultsPlus

Examiner Tip

When you are asked to comment on data (as graphs, tables etc) make sure you do just that and no more. This answer talks about statins and CVD, there is nothing in Figs 1,2 or 3 about that, 2 and 3 are about cholesterol, and CVD .

and grammar and the use of technical terms in your answer to this question.

(6)

People with very high cholesterol levels can benefit well from statins as it helps them lower their cholesterol levels quickly and efficiently. On the other hand, people are highly likely to not follow their prescription, which could lead to extremely low levels of cholesterol which can still be damaging to the body. Also, the side-effects may not outweigh the results of the statins according to ~~a few~~ some people, which causes a lot of discomfort ~~for~~ far them. But also, decreasing the cholesterol levels with statins ensures the patient with a lower risk of developing a CVD and dying.

ResultsPlus
Examiner Comments

Again, this answer comments on the efficiency of cholesterol lowering properties of statins but there is no data on that. In fact this answer makes no reference to the data at all, just makes unsubstantiated general points and gained no marks.

In Figure 2, the higher the blood ~~cholesterol~~ cholesterol, the rate of death from CVD increases. With the use of statins, blood cholesterol could be lowered which in turns lowering the rate of death from CVD. But statins causes muscle problems.
Where woman is concerned (Figure 3), the risk of death from CVD is highest between 4-4.9 blood cholesterol level in mmoldm^{-3}.
When blood cholesterol increases further, risk of death from CVD decreases. However, statins are needed to help lowering blood cholesterol to reduce risk of death from CVD.
But there are side effects of statins such as mobility difficulties, general muscle problem and muscle damage. Overdosage of statins can cause harm. So, with a little help from statins, diet should be control and more exercise should be taken to reduce CVD ricks.

ResultsPlus
Examiner Comments

This is a good answer and got 5 marks, but it lost one of the quality marks due to the irrelevancies which are circled in red.

Q2b (ii) This question is difficult in the sense that there are many questions which could be asked in this general area but the examiners were looking for ones which would take the information already given a little further. A wide rage of responses was, however, credited.

In the second part some precision was needed, so if it was a library needed to know what kind or which section. If a doctor, what sort and if on the internet how the information might be found.

(ii) Suggest how the information that you have been given about statins, cholesterol and CVD might be expanded upon. Consider **what** further questions you might want to ask, and **where** you might look for answers.

(3)

What further questions you might want to ask

① How does the Cholesterol level affect the risk of cardio vascular diseases?

② How can the Cholesterol level be controlled within normal range?

③ Are there any side effects of statins?

Where you might look for answers

Answers can be searched on the internet, newspaper, different books in the library or we can talk to a doctor for more details

ResultsPlus
Examiner Comments

This answer address three questions which the data already answer, so no marks here. In the second part it is again all too vague for any marks.

(ii) Suggest how the information that you have been given about statins, cholesterol and CVD might be expanded upon. Consider **what** further questions you might want to ask, and **where** you might look for answers.

(3)

What further questions you might want to ask

- what are the symptoms of CVD?
- How does the statin drug works to lower the cholesterol level?
- How does having high cholesterol lead to CVD?
- How much does the treatment using statins ~~cos~~ cost over the long term?

Where you might look for answers

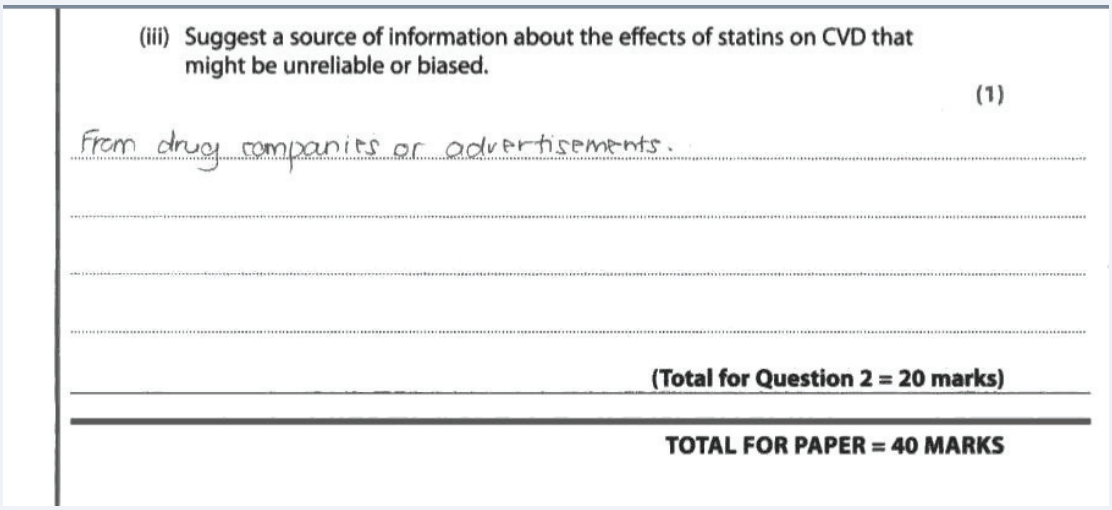
- use search the internet to search for answers. use a specific search engine like Google and type in keywords like statins, cholesterol on CVD to find more information about them.
- to a library research. find more information about statins, cholesterol and CVD using a medical or a scientific journals to discover more about the related area.

ResultsPlus

Examiner Comments

This answer gets the cost point in the first part and search engine is used for another mark in the second. All the other questions in the first part are too far outside the brief for a mark.

Q2a (iii) This question was not understood by many candidates who were keen to quote data from the graphs given and then criticise it. In other cases the idea was understood but the answer was the too vague such as 'drug company' as opposed top 'drug company making or selling statins', or website, rather than one associated with a stain researcher. The following show some of these problems.



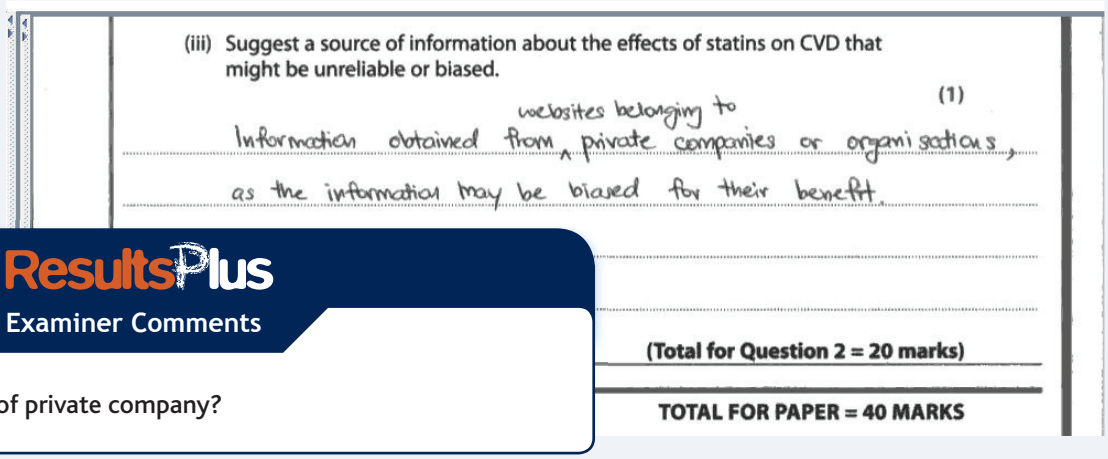
(iii) Suggest a source of information about the effects of statins on CVD that might be unreliable or biased.

(1)

From drug companies or advertisements.

(Total for Question 2 = 20 marks)

TOTAL FOR PAPER = 40 MARKS



(iii) Suggest a source of information about the effects of statins on CVD that might be unreliable or biased.

(1)

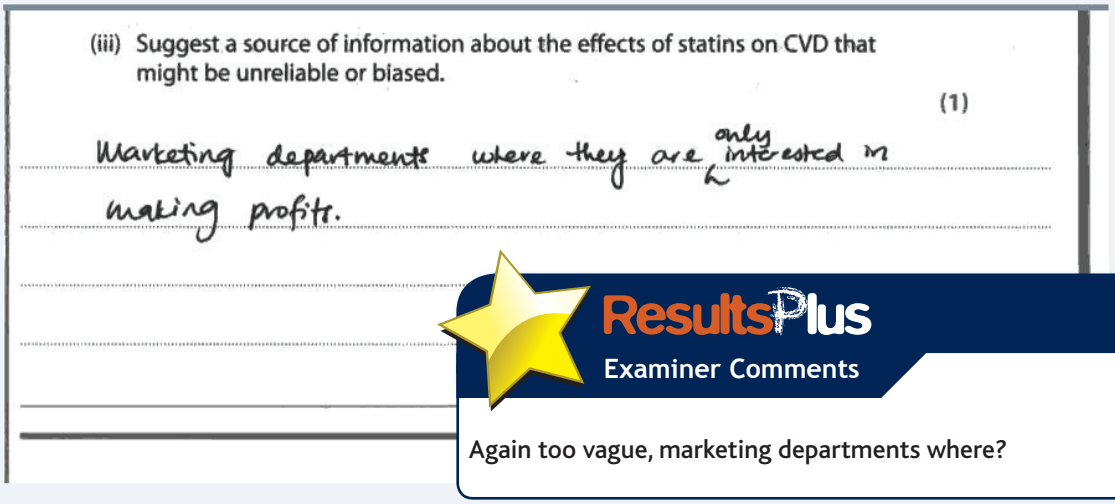
Information obtained from websites belonging to private companies or organisations, as the information may be biased for their benefit.

(Total for Question 2 = 20 marks)

TOTAL FOR PAPER = 40 MARKS

ResultsPlus
Examiner Comments

What type of private company?



(iii) Suggest a source of information about the effects of statins on CVD that might be unreliable or biased.

(1)

Marketing departments where they are only interested in making profits.

ResultsPlus
Examiner Comments

Again too vague, marketing departments where?

APPENDIX A

Unit Grade Boundaries And Uniform Marks

The raw mark obtained in each module is converted into a standardised mark on a uniform mark scale, and the uniform marks are then aggregated into a total for the subject. Details of the method of aggregation are given in Appendix B.

For AS examinations, the two examined unit tests (6BI01 & 6BI02) each have a weighting of 40% with a maximum of 120 uniform marks; and the coursework unit* (Unit 6BI03) has a weighting of 20% with a maximum of 60 uniform marks.

For the A2 units, the two examined unit tests (6BI04 & 6BI05) also each have a weighting of 40% with a maximum of 120 uniform marks; and the coursework unit* (Unit 6BI06) has a weighting of 20% with a maximum of 60 uniform marks.

Therefore, for candidates taking the full A level, the four examined unit tests (6BI01, 6BI02, 6BI04, 6BI05) each have a weighting of 20% with a maximum of 120 uniform marks; and the two coursework units* (Unit 6BI03 & 6BI06) have a weighting of 10% with a maximum of 60 uniform marks.

The table below shows the boundaries at which raw marks were converted into uniform marks in this examination. The A and E grade boundaries are determined by inspection of the quality of the candidates' work. The other grade boundaries are determined by dividing the range of marks between A and E. Marks within each grade are scaled appropriately within the equivalent range of uniform marks.

Unit Grade Boundaries

Unit	Max. Mark	A	B	C	D	E
	Uniform marks 120	96	84	72	60	48
6BI01 (Unit 1)	*Raw marks* 80	57	52	47	43	39
6BI02 (Unit 2)	80	57	52	48	44	40
6BI04 (Unit 4)	90	59	55	51	47	44

Unit	Max. Mark	A	B	C	D	E
	Uniform marks 60	48	42	36	30	24
6BI07 (International)	*Raw marks* 40	29	25	21	18	15

*or written alternative for International centres.

Further copies of this publication are available from
Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467
Fax 01623 450481
Email publications@linneydirect.com
Order Code USO220646 January 2010

For more information on Edexcel qualifications, please visit
www.edexcel.com/quals

Ofqual

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Rewarding Learning