# GCSE Biology

# How to answer 6 mark LOR – J260-04 2018

# Example: J260 04 June 18, Q6e

### Task 1: Read this question

**6.** Parkinson’s disease is a condition that affects the nervous system. There is currently no cure for the disease.

**(e)\*** Food plants in the same family as tobacco also contain nicotine.

Scientists have studied how eating these foods affects the numbers of people with Parkinson’s disease.

People with Parkinson’s disease answered a questionnaire about their diet.

Scientists assessed the risk of developing Parkinson’s disease in people that ate plant foods containing nicotine. The results are shown in **Table 6.1.**

|  |  |  |
| --- | --- | --- |
| **Plant food in diet** | **Concentration of nicotine in the food (µg nicotine/kg food)** | **Risk of developing Parkinson’s disease\*** |
| Food containing no nicotine | 0 | 1.00 |
| Peppers | 102 | 0.24 |
| Potatoes | 19 | 0.92 |
| Tomatoes | 44 | 0.58 |
| Tomato juice | 30 | 2.16 |

**Table 6.1**

\* This is the person’s risk compared with patients who ate foods containing no nicotine.

For example:

* If the risk is 2.00, you are twice as likely to get the disease
* If the risk is 0.50, you are half as likely to get the disease.

Use the information to determine if there is a correlation between eating plant foods with different concentrations of nicotine and the risk of developing Parkinson’s disease.

Use the data in **Table 6.1** to support your answer.

#### Read the part of the question that tells you what to do….

‘Use the information to determine if there is a correlation between eating plant foods with different concentrations of nicotine and the risk of developing Parkinson’s disease.

Use the data in **Table 6.1** to support your answer.’

Underline parts of the question that you need to include when you write your answer.

### Task 2: What levels are these answers?

Look again at the question. The ‘important things to do’ have been underlined:

**Use the information** to determine if there is a **correlation** between eating plant foods with different concentrations of nicotine and the risk of developing Parkinson’s disease.

**Use the data** in **Table 6.1** to support your answer.

A ‘good’ answer (a **Level 3 answer**) will answer ALL parts of the question so will ….

* State whether there is a correlation or not
* Make a conclusion to support correlation statement
* Refer to the data from the table in the conclusion

Answers at **level 2 and level 1** will only answer some parts of the question.

#### Look at these three examples of candidate answers

In your group, decide whether you think each answer is a ‘level 1’ or a ‘level 2’ or a ‘level 3’ answer. You don’t need a mark scheme to do this, just use your judgement, based on what the question is asking.

Justify your decisions by…

* Underlining parts of the answers that you ‘like’ and work out which part of the question the answer links to.
* Making notes on the answer to say what you think is ‘missing’.

**Answer 1**

Use the information to determine if there is a correlation between eating plant foods with different concentrations of nicotine and the risk of developing Parkinson’s disease.

Use the data in **Table 6.1** to support your answer.

* By eating peppers you have less risk of having Parkinson disease.
* You are more likly to get Parkinson disease by drinking tomato juice.
* Eating potatoes you are *sursing* yourself to have Parkinson disease.
* By having foods that have no nicotine you have less risk of having Parkinson diseas.
* By having peppers and food with no nicotine you have less risk of having Parkson disease.

**Level**

**Notes**

**Answer 2**

Tomates have a nicotine level of 44 with a Parksinon’s disease risk of 0.58, but tomato juice contains a nicotine level of 30 with a parkinsons disease risk of 2.16. This shows because it is no longer a pure substance that the nicotene has been taken out increasing the risk of parkinson’s disease which is also why foods containg no nicotine have a risk of developing Parkinson’s disease of 1.00.

**Notes**

**Answer 3**

**Level**

There is no correleation between the concentration of nicotine in food and the risk of parkinsons. We can clearly see this by the food tomato juice, has 30kg of nicotine but the highest (2.16) risk of parkinsons. Whereas peppers contain 102kg of nicotine but only a 0.24 risk of parkinsons. However food which contains no nicotine still gives a 1.00 chance of parkinsons. Therefore not consuming nicotine is more likely to give parkinsons than a plant which has high levels.

**Notes**

**Level**

### Task 3: Writing your own answer

Now write your own answer to the question on this sheet.

**6.** Parkinson’s disease is a condition that affects the nervous system. There is currently no cure for the disease.

**(e)\*** Food plants in the same family as tobacco also contain nicotine.

Scientists have studied how eating these foods affects the numbers of people with Parkinson’s disease.

People with Parkinson’s disease answered a questionnaire about their diet.

Scientists assessed the risk of developing Parkinson’s disease in people that ate plant foods containing nicotine. The results are shown in **Table 6.1.**

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Use the information to determine if there is a correlation between eating plant foods with different concentrations of nicotine and the risk of developing Parkinson’s disease.

Use the data in **Table 6.1** to support your answer.

### Task 4: How did the examiners mark these answers?

This is the mark scheme for the question that the examiners used to mark the question.

| **Question** | **Answer** | **Marks** | **Guidance** |
| --- | --- | --- | --- |
| **6** | **(e)** |  | **Level 3 (5–6 marks)** Analyses data to form reasoned conclusions about the relative risk and presence or lack of correlation. *There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.***Level 2 (3–4 marks)** Analyses some data to form conclusions about the risk and presence or lack of correlation. *There is a line of reasoning presented with some structure. The information presented is relevant and supported by some evidence.* **Level 1 (1–2 marks)** Identifies foods from the data that change the risk of Parkinson’s disease. *There is an attempt at a logical structure with a line of reasoning. The information is in the most part relevant.* **0 marks** *No response or no response worthy of credit.*  | 6 | **AO3.1a Analyse data** For example: * reduction of risk linked with eating all foods except tomato juice
* peppers - 0.24 reduced risk (conc. 102)
* tomatoes – 0.58 reduced risk (conc. 44)
* potatoes – 0.92 reduced risk (conc. 19)
* tomato juice – 2.16 increases risk (conc. 30)

**AO3.2b Analyse information to make conclusions/correlations** * Idea that results from tomato juice suggest that other factors may be involved.
* correlations imply that nicotine-containing foods give protection against Parkinson’s disease
* Portion may alter risk
* Comparative statements about risk
* Correlation ideas limited by small sample size
* other factors may be involved in patients who ate nicotine-containing foods
 |

This is some information about the marks that the examiners gave for each answer.

|  |  |  |  |
| --- | --- | --- | --- |
| **Answer** | **Level** | **Mark** | **Comments** |
| 1 | **2** | 3 | This answer is quite difficult to mark and needs a bit of thinking about. The candidate does not make any attempt at a comment about correlation, so this rules out Level 3. The first two lines are clear Level 1 territory because they have identified that peppers lower your risk.It’s a bit better than a Level 1 answer, because the rest of it hints at analysing some of the data – leading to correlation, but it doesn’t quite go all the way there for 4 marks. The examiner has to read a little bit too much into the answer and perhaps does a little bit of work on behalf of the candidate. If the had mentioned a second food that lowers the risk then 4 marks would have been given for implication of correlations.The word in italics was difficult to read (original answer was handwritten. If the examiner knew what this word was then it could have possibly gained the extra mark. So best fit here is just into Level 2 and 3 marks. |
| 2 | **1** | 2 | Level 1 says ‘*Identifies foods from the data that change the risk of Parkinson’s disease’.*The candidate mentions tomatoes and tomato juice and the risks associated with these – so they meet the criteria for Level 1.This answer can’t be Level 2 or 3 because they don’t mention or even imply anything about correlation. All they really do is quote data from the table without adding anything to it. |
| 3 | **3** | 6 | This response was credited with all 6 marks.The marking guidance for Level 3 says ‘*Analyses data to form reasoned conclusions about the relative risk and the presence or lack of correlation’.* Break this into two parts: *‘Analyses data’ and ‘form reasoned conclusions about…correlation’.*They have reached the conclusion about there being no correlation. Their first sentence could not be any clearer. ‘*There is no correlation…’*The next sentence shows us evidence of them analysing the data. They discuss some numbers from the table about tomato juice and peppers. The candidate’s answer is simple, well-structured and to the point. |

#### Task 4 – Look at the levels you gave for each answer

Did you agree with the examiner level? If not, look at the comments and work out why.

Now use the mark scheme to mark your own answer.

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