

# Biology KS4 book marking

pH	Time taken for starch to disappear / s
2	193
3	120
4	<del>73</del> 73
6	107
8	333

Coded target questions are assigned based on the student's answer

2) As the results get further away from the optimum pH value, the time taken for the starch to be digested increases. (T4) + (T1)

3) ~~This~~ pH affects the rate of ~~the~~ reaction because if the pH isn't optimum the enzymes will begin to denature and so the time taken re-substrate complexes will form so less

Formative corrections are made to answers and students should respond to these in green pen.

4) ~~Yes, I think the results are valid~~ No, I don't think the results are valid because all the measurements are quite far from each other at pH 2 and 8. This means that the ~~amount~~ <sup>volume</sup> ~~control~~ variables ~~amount~~ of starch, amylase, concentration of starch and amylase, temperature - weren't controlled the results won't be the same.

Students write down their assigned targets and answer these in green pen.

T4 - Explain why pH 4 was the optimum pH for amylase.

pH 4 was the optimum pH because the rate of reaction was the quickest. This means ~~less~~ the active sites won't be denatured and there will be more enzyme-substrate complexes formed. This enzyme then breaks down the substrate and more product is then formed.

T1 - Explain how you would improve the method to determine more accurately the optimum pH for amylase.

- Decrease ~~the~~ intervals of pH you measure ~~at~~
- Decrease the time after which you measure (eg. 10s instead of 20s)

# Biology KS4 assessment marking

(ii) Describe and explain the differences in the data for the sperm and for the egg. (3) / 2

The mean ~~is~~ number of mitochondria per  $\mu\text{m}^3$  is much higher for the sperm cell ✓ than the egg. Formative corrections are made to answers and students should respond to these in green pen. / 2  
has lots of nutrients in its cytoplasm. ready  
Whereas the sperm has to travel very far (for its size) to reach the egg and hence needs more mitochondria. Also the mean volume of the sperm is  $3.0 \mu\text{m}^3$  but the egg is  $4,000,000 \mu\text{m}^3$ . This is because the egg is much larger than the sperm so it has increased ~~the~~ chances of being fertilised. to release energy using respiration. / 2  
or much

Discuss this conclusion. Use the data and give reasons for and against the scientist's conclusion. (4) / 2

In longer answer questions, the mark scheme points will

be noted with a number under the ticks, so students know which marks were awarded.

/ 1 was given more need. At 0.5 mg per kg of rat, 16.8% of sperm cells <sup>were</sup> damaged and at 1.0 mg per kg of rat, 24.8% of sperm cells were damaged. / 1 I don't think they can / 1 come to this conclusion because they only tested 3 results / 1 and did not see how much nicotine it would take

There should be evidence of corrections by the student throughout the assessment in response to class feedback.

cells - not repeated

- investigation on rats

- rats similar to humans

(b) Explain why some plant cells contain many chloroplasts, some plant cells contain few chloroplasts and some plant cells contain no chloroplasts. (3)

Chloroplasts trap sunlight for help / 1 plants with / 1 photosynthesis / 1 <sup>how?</sup> and give the plant

A wavy line indicates an unclear statement or error which should be corrected.

Chloroplasts rely on photosynthesis

use or no chloroplasts can

rely on other sources many in palisade, few in spongy cells,

none in root cells