PEARSON EDEXCEL GCSE BIOLOGY (HIGHER) · 1BI0

BIOLOGY



EXAM QUESTION PACK

TOPIC 1: KEY CONCEPTS IN BIOLOGY (PACK 4)

SCORE	PERCENTAGE
/19	%

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Q1.

State **two** roles of bile in digestion.

(2)

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2 .....

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Q2.

* Describe the roles of the enzymes involved in digestion.

(6)

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Q3.

Transport and exchange of materials

Some students investigated water movement in plant cells.

They measured the mass of five pieces of potato.

Each piece of potato was put into a different concentration of salt solution.

After one hour the pieces of potato were dried and the mass of each was recorded.

The results are shown in the table.

concentration of salt solution / %	mass / g			percentage change / %
	start	after 1 hour	change	
0	10.2	13.1	+2.9	+28.4
10	9.8	11.4	+1.6	+16.3
20	10.3	9.8	–0.5	
30	10.1	8.9	–1.2	–11.9
40	9.7	7.7	–2.0	–20.6

(a) (i) Calculate the percentage change in the mass of the potato in the 20% salt solution.

(2)

..... %

(ii) Suggest why calculating a percentage change is more useful than calculating the change in mass in this investigation.

(1)

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(b) Mitosis occurs in plant cells during growth.

Describe the division of a cell by mitosis.

(3)

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*(c) Explain how active transport and diffusion provide a plant with named substances it needs for growth.

(6)

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(Total for question = 12 marks)

Q4.

The enzyme proteinase K is used to extract DNA from skin cells.

(i) Explain why proteinase K is used to extract DNA from skin cells.

(2)

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(ii) Describe the safety precautions that should be used when handling human tissue in a laboratory.

(3)

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(iii) Proteinase K is usually stored at 4 °C.

Figure 10 shows the effect of storage temperature on the activity of proteinase K.

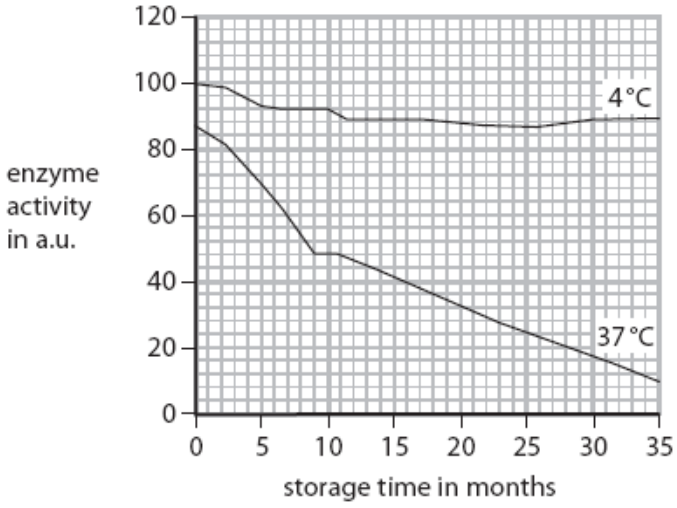


Figure 10

Explain how the activity of proteinase K changes when stored at 37 °C.

(2)

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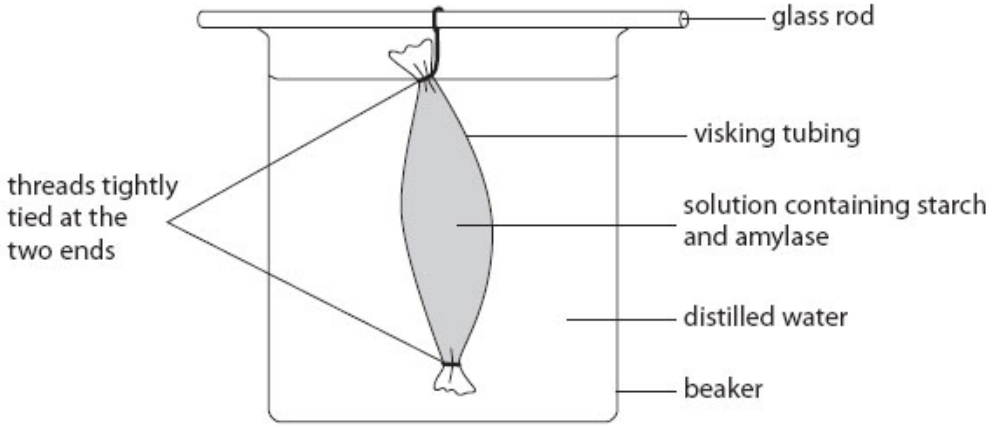
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(Total for question = 7 marks)

Q5.

Visking tubing is made of a plastic material through which small molecules can pass.

The diagram shows how the equipment for an investigation using visking tubing was set up.



(a) In this investigation, the concentration of glucose in the distilled water was measured at the start and then every five minutes.

The results are shown in the table.

time of measuring the glucose concentration in the distilled water / mins	concentration of glucose in the distilled water / g cm^{-3}
0	0.00
5	0.07
10	0.39
15	0.52
20	0.79
25	0.79

(i) Describe the results of this investigation.

(2)

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(ii) Explain the results of this investigation

(3)

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*(iii) The diagram shows how visking tubing can be used to model the small intestine.

This model does not fully represent the structure and functions of the small intestine.

Evaluate the strengths and weaknesses of this model.

(6)

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(b) Complete the sentence by putting a cross (☒) in the box next to your answer.

The function of the gall bladder is to

(1)

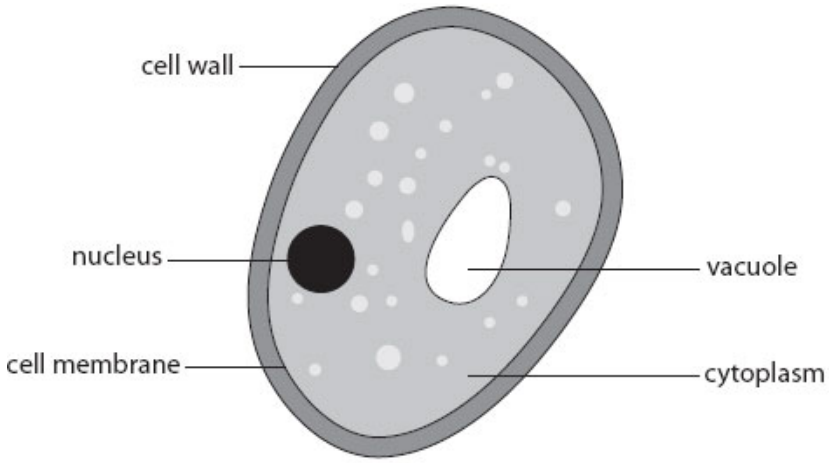
- ☒ **A** make bile
- ☒ **B** make lipase
- ☒ **C** store bile
- ☒ **D** store lipase

(Total for Question = 12 marks)

Q6.

Yeasts are microorganisms that are used in the brewing and baking industries.

The diagram shows a yeast cell.



(i) State **two** ways in which the structure of this yeast cell differs from the structure of a bacterial cell.

(2)

1 .....

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2 .....

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(ii) Plant cells can produce glucose.

Suggest why yeast cells cannot produce glucose.

(1)

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Specific points: