

1. **Nov/2020/Paper\_11/No.40**

Which statements about the use of bacteria to produce human insulin are correct?

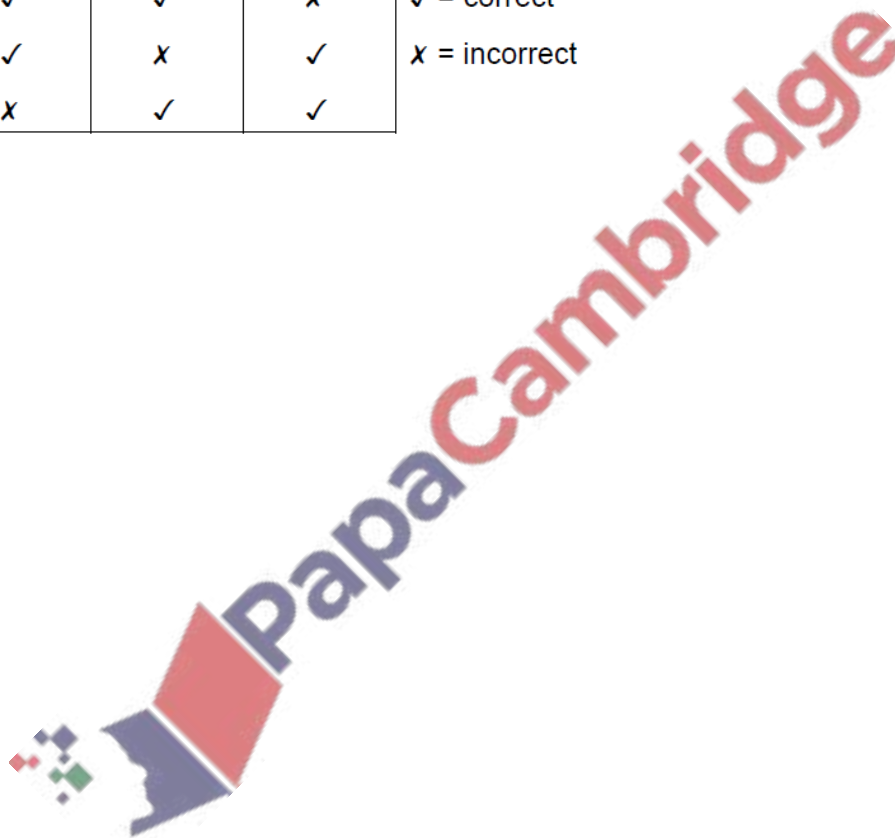
- 1 Enzymes are used to cut out the human insulin gene.
- 2 The human insulin gene is transferred to bacterial DNA.
- 3 The bacterial DNA is transferred into human cells.

	statement		
	1	2	3
<b>A</b>	✓	✓	✓
<b>B</b>	✓	✓	x
<b>C</b>	✓	x	✓
<b>D</b>	x	✓	✓

key

✓ = correct

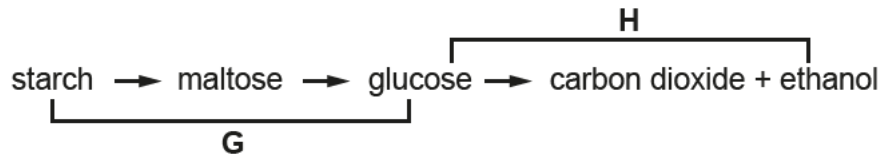
x = incorrect



(a) Explain the importance of the production of carbon dioxide in bread-making.

.....  
..... [1]

(b) The diagram shows a flow chart for some of the chemical reactions that occur during bread-making.



Name the processes occurring at **G** and **H**.

**G** .....

**H** .....

[3]

(c) Explain what is causing the changes at **G**.

.....  
.....  
..... [3]

(d) (i) State the name of the microorganism used in bread-making and the group of organisms to which it belongs.

name .....

group .....

[2]

(ii) State **two** characteristics of organisms in this group.

1 .....

2 .....

[2]

[Total: 11]

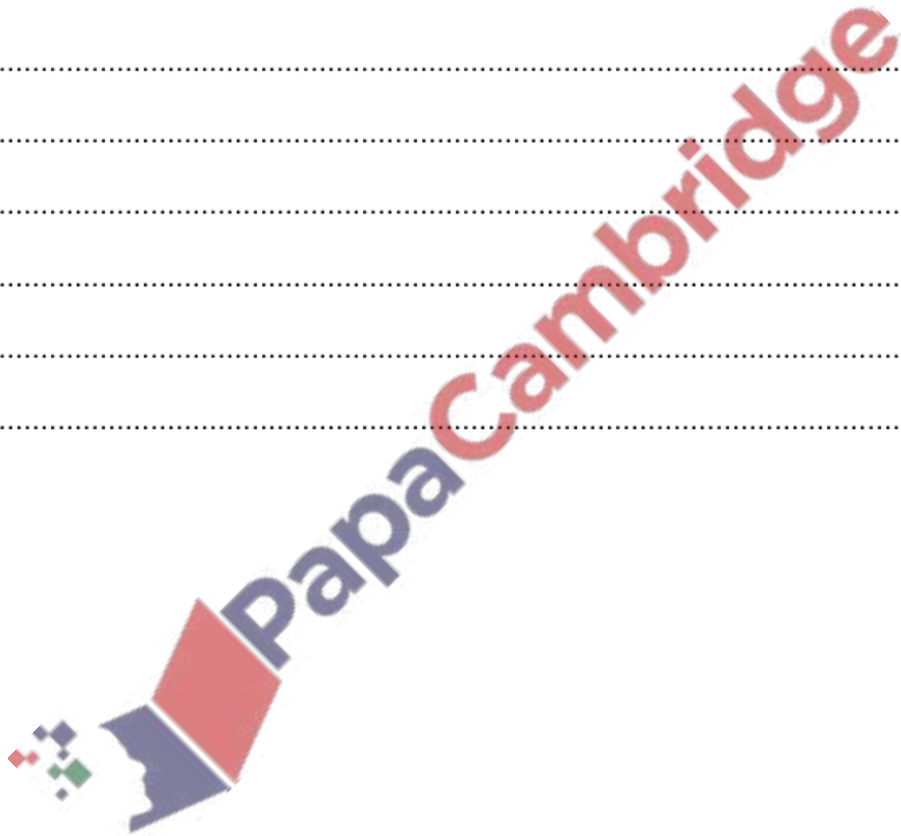
(a) Describe how changes in gene structure may be caused.

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.....  
.....  
..... [3]

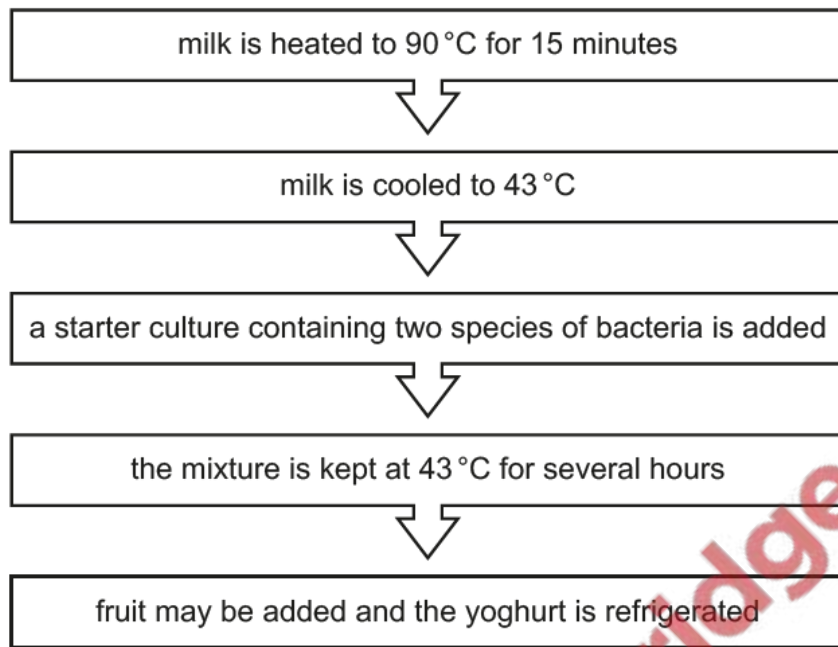
(b) Explain how changes in gene structure may eventually lead to the evolution of a species.

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.....  
.....  
.....  
..... [7]

[Total: 10]



The flow chart shows steps taken in the production of yoghurt from milk.



(a) Heating the milk to 90°C for 15 minutes sterilises the milk.

Suggest the importance of sterilising the milk.

.....

.....

.....

..... [2]

(b) Explain why the milk must be cooled to 43°C before the starter culture of bacteria is added.

.....

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.....

.....

..... [3]

(c) The two species of bacteria added to the milk are **not** mobile and are **not** pathogens.

(i) State the external structure used for movement by some species of bacteria.

..... [1]

(ii) Explain why it is important that the bacteria added to milk are not pathogens.

.....  
..... [1]

(d) Describe, with reference to **named** chemicals, the role of the bacteria during the time for which the mixture is kept at 43 °C.

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.....  
..... [4]

(e) Suggest **and** explain **one** benefit to human health of eating yoghurt to which fruit has been added rather than eating yoghurt to which no fruit has been added.

.....  
.....  
.....  
..... [2]

[Total: 13]