

21. Biotechnology and genetic modification

21.1 Biotechnology and genetic modification

Paper 3 and 4

Question Paper

Paper 3

Questions are applicable for both core and extended candidates

- 1 (c)** Bacteria are another type of microorganism that is used in biotechnology.

Tick **two** boxes to show why bacteria are useful in biotechnology.

cause disease	
have the same structure as plant cells	
make complex molecules	
have a rapid reproduction rate	
reproduce sexually	

[2]

- 2 (c)** State **two** reasons why bacteria are useful in biotechnology and genetic modification.

1

2

[2]

Paper 4

Questions are applicable for both core and extended candidates unless indicated in the question

3 Bacteria are used in many biotechnological processes.

(a) Explain why bacteria are useful in biotechnology. **(extended only)**

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..... [3]

4 (c) Bacteria are useful in genetic engineering because they contain plasmids.

(i) Describe how a plasmid is cut so that a new gene can be inserted into the plasmid. **(extended only)**

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..... [2]

(ii) List **two** reasons, other than the presence of plasmids, that make bacteria and single-celled fungi useful to biotechnology industries. **(extended only)**

1

2 [2]

5 Biotechnology is used in the process of bread-making.

Fig. 1.1 shows some of the steps in making bread.

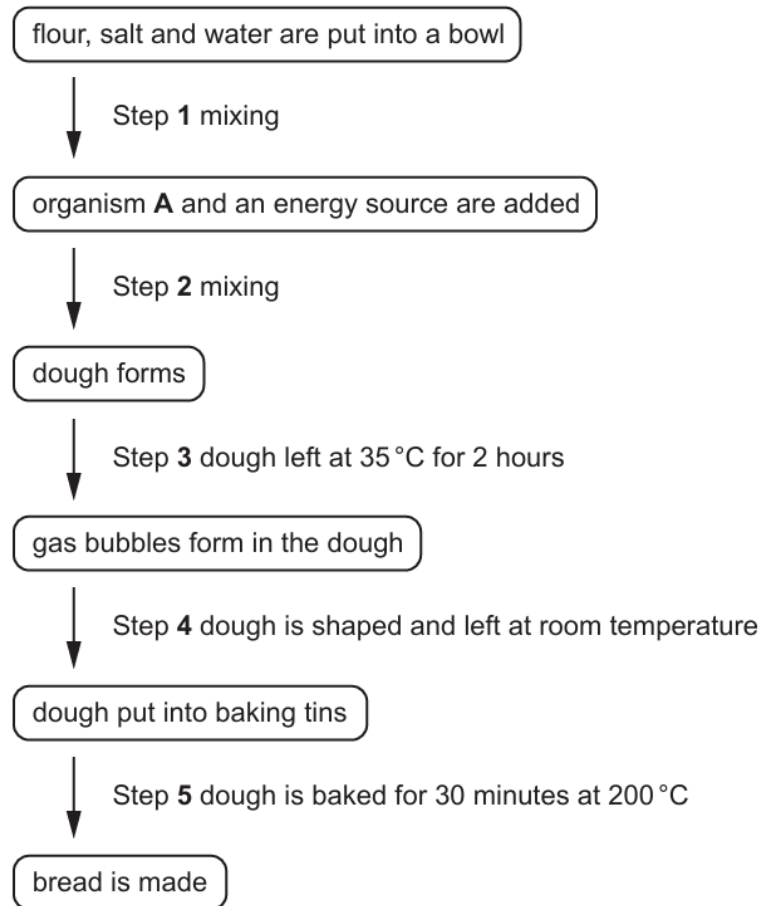


Fig. 1.1

(a) State the name of organism **A** in Fig. 1.1.

..... [1]

(d) State the name of **two** products of biotechnology, other than bread, that make use of microorganisms.

1

2

[2]

- 6 (d)** Some bacteria and viruses cause disease but many are useful to the biotechnology industry.

Explain why bacteria are useful in biotechnology. **(extended only)**

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.....[3]