

CHAPTER 21 BIOTECHNOLOGY

(0610/22/February/March 2017)

1.

Genes are isolated from human DNA using1..... enzymes.

A bacterial plasmid is cut with the same enzyme forming2..... .

The human DNA is inserted into the bacterial plasmid using the enzyme3..... forming a4..... plasmid.

Which row correctly completes gaps 1, 2, 3 and 4?

	1	2	3	4
A	ligase	sticky ends	protease	restriction
B	recombinant	new DNA	ligase	daughter
C	restriction	daughter plasmids	ligase	diploid
D	restriction	sticky ends	ligase	recombinant

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2.

Ligase enzymes are used in genetic engineering to

- A cut open plasmid DNA.
- B insert plasmids into bacteria.
- C isolate the DNA making up a human gene.
- D** join human DNA to plasmid DNA.

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3.

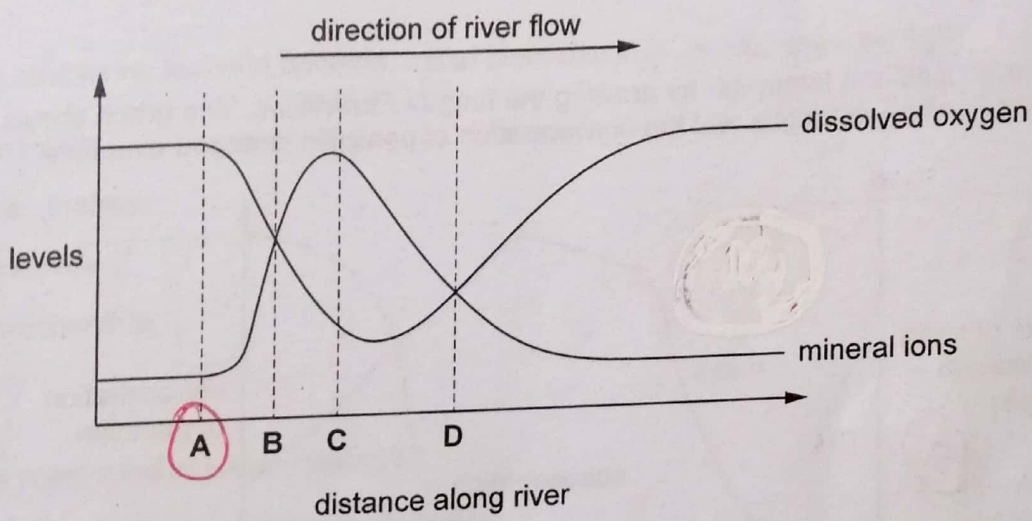
Which is a reason for using bacteria in biotechnology?

- A** Bacteria are found inside the human body.
- B Bacteria can become resistant to antibiotics
- C** Bacteria can make complex molecules.
- D Bacteria reproduce slowly.

4. Why is yeast used in breadmaking?

- A to produce alcohol
- B** to produce carbon dioxide
- C to use up oxygen
- D to use up sugar

5. The graph shows the levels of dissolved oxygen and mineral ions in a river.
At which point does raw sewage enter the river?



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6. The diagram shows five stages in genetic engineering.

stage 1
The DNA making up a human gene is isolated using restriction enzymes.

stage 2
The DNA of a bacterial plasmid is cut open using restriction enzymes.

stage 3
The DNA of the human gene is inserted into the bacterial plasmid DNA.

stage 4
The plasmid containing the human gene is put back into a bacterium.

stage 5
The bacteria with the human gene divide and make the human protein.

Which stages involve the formation of sticky ends?

- A 1, 2 and 3
- B** 1 and 2 only
- C 1 and 3 only
- D 2 and 3 only

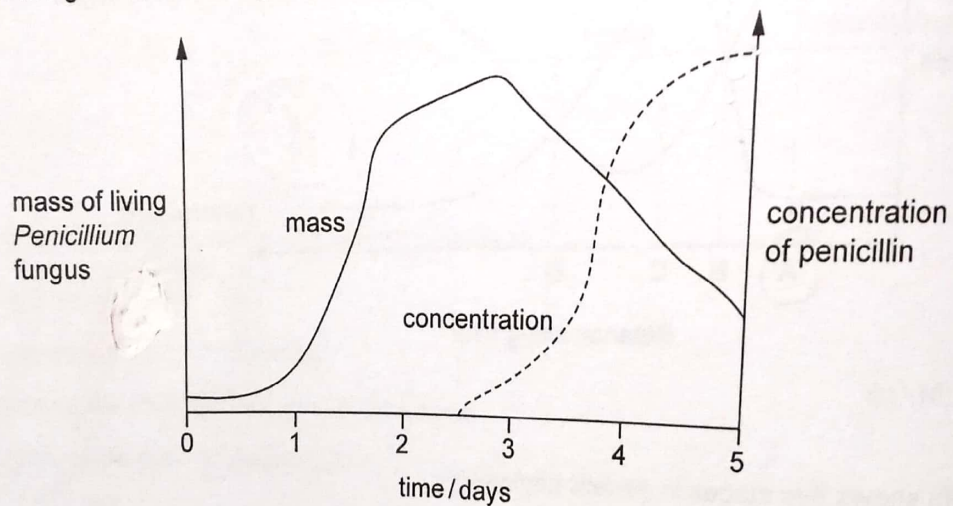
7.

Which structures are present in a bacterial cell?

	cell wall	nucleus
A	✓	✓
B	✓	x
C	x	✓
D	x	x

8.

Penicillin is produced in a fermenter by growing the fungus *Penicillium*. The graph shows how the mass of living *Penicillium* fungus and the concentration of penicillin changed over time.



When is the best time to collect the penicillin?

- A at 1.5 days
- B at 3 days
- C at 3.5 days
- D at 5 days

9.

A gene for insulin is taken from a human cell and placed in a bacterium.

The bacterium can then make human insulin.

What is this process called?

- A artificial selection
- B genetic engineering
- C heterozygous inheritance
- D natural selection

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10.

Which structures, found in bacteria, make them useful in genetic engineering?

- A cell walls
- B membranes
- C plasmids
- D mitochondria

11.

Why is yeast used in bread-making?

- A Aerobic respiration produces alcohol.
- B Aerobic respiration produces lactic acid.
- C Anaerobic respiration produces alcohol.
- D Anaerobic respiration produces carbon dioxide.

12.

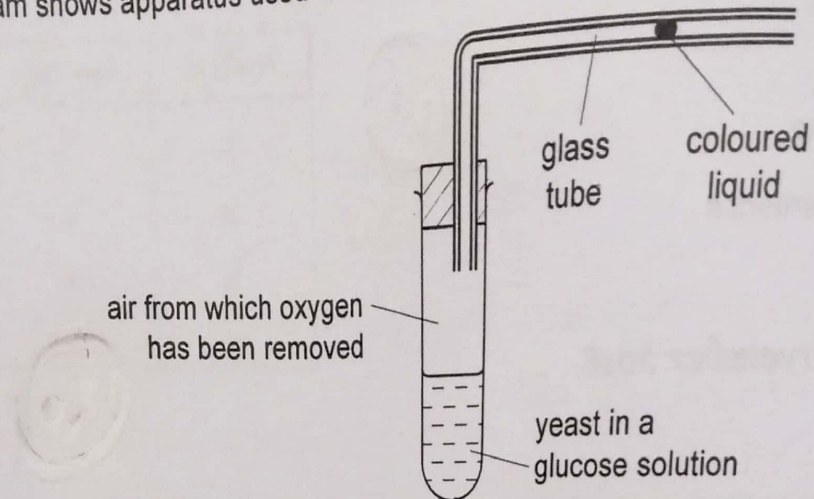
An advantage of some genetically modified crop plants is that they will not

- A be affected by herbicides.
- B need carbon dioxide.
- C need magnesium ions.
- D need water.

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13.

The diagram shows apparatus used to investigate anaerobic respiration in yeast.



What happens to the coloured liquid?

- A moves rapidly to the left
- B moves slowly to the left
- C moves to the right
- D stays still

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14.

Why is yeast used in bread-making?

- A to provide carbon dioxide
- B to provide ethanol
- C to provide lactic acid
- D to provide oxygen