AQA – Cells – AS Biology P2

1. June/2021/Paper_2/No.4

0 4 . 1 Give **two** structures found in all prokaryotic cells and in all eukaryotic cells.

[2 marks]

1 _____

2 _____

All prokaryotic cells contain a circular DNA molecule and some prokaryotic cells contain plasmids.

0 4 . 2 Scientists have found that the rate of plasmid replication is faster in cells growing in a culture with a high concentration of amino acids than in a culture with a lower concentration of amino acids.

Suggest **one** explanation for the faster rate of plasmid replication in cells growing in a culture with a high amino acid concentration.

[2 marks]

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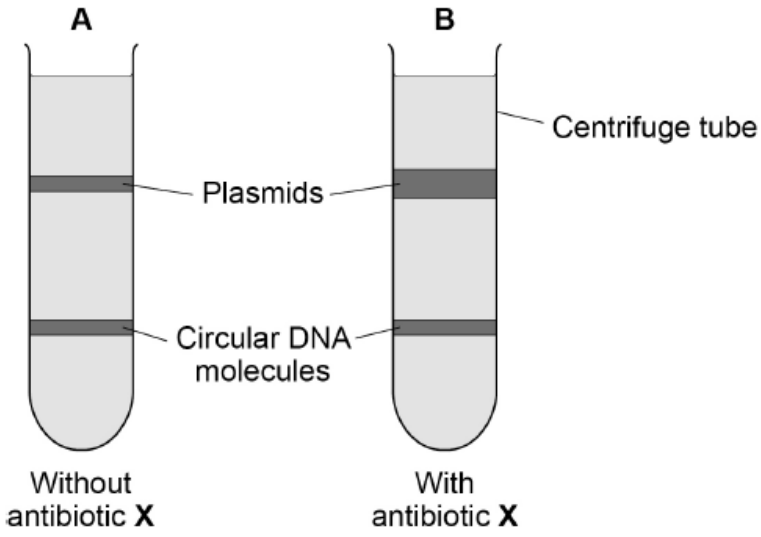
A scientist prepared a culture of a bacterial species.

- She extracted the plasmids and the circular DNA molecules from a sample of cells taken from this culture (**A**).
- She then added antibiotic **X** to the culture and let the cells divide for 4 hours.
- She then extracted the plasmids and the circular DNA molecules from a sample of these cells (**B**).
- The scientist separated the plasmids from the circular DNA molecules in **A** and in **B** using ultracentrifugation.

Figure 6 shows her results.

Figure 6



0 4 . 3 What can you conclude from **Figure 6** about a structural difference between the plasmids and the circular DNA? Explain your answer.

[2 marks]

0 4 . 4 What can you conclude from **Figure 6** about the effect of antibiotic **X** on plasmid replication and on circular DNA replication? Explain your answer.

[2 marks]