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Level: HL IB in Biology

Subject: Biology

Topic: IB HL Biology

Type: Topic Question

2002

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All International Baccalaureate IB Topic Questions HL Biology

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**BIOLOGY**

**HL - IB**

Key skills

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**\*\*Question 1\*\***

Which of the following would be the result of analyzing a DNA molecule 14,000 base pairs in length?

- A. 28,000 pentose sugars, 14,000 phosphate groups, an equal ratio of cytosine to thymine bases, and an equal ratio of guanine to adenine bases
- B. 28,000 pentose sugars, 28,000 phosphate groups, an equal ratio of cytosine to guanine bases, and an equal ratio of thymine to adenine bases
- C. 14,000 pentose sugars, 28,000 phosphate groups, an equal ratio of cytosine to thymine bases, and an equal ratio of guanine to adenine bases
- D. 28,000 pentose sugars, 28,000 phosphate groups, an equal ratio of cytosine to thymine bases, and an equal ratio of guanine to adenine bases

[1 mark]

**\*\*Question 2\*\***

Which of the following would not be considered an advantage of complementary base pairing in DNA?

- A. It enables each DNA strand to act as a template for the formation of a new strand during replication
- B. Hydrogen bonding between complementary bases stabilizes the structure of the DNA molecule
- C. It ensures genetic continuity between generations of cells so that they all contain the same genetic information as the parent cells
- D. It plays an important role in maintaining the covalent bonds within the DNA molecule

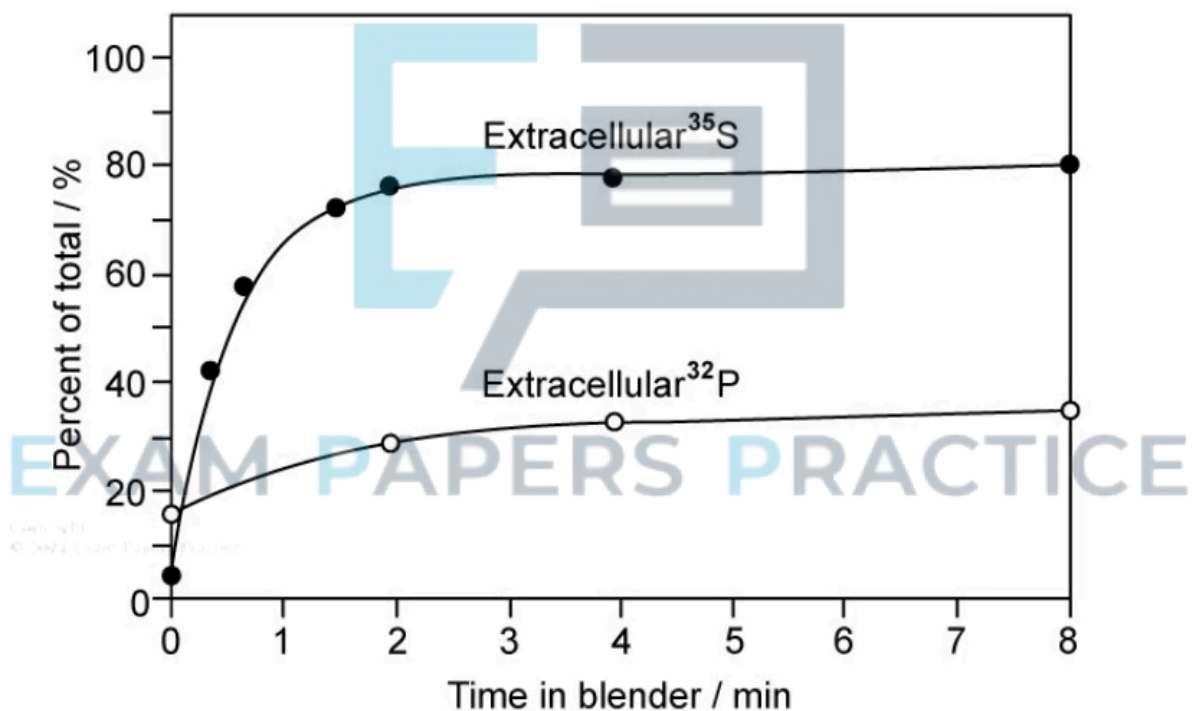
[1 mark]

**\*\*Question 3\*\***

Hershey and Chase carried out an experiment to determine whether the molecule of heredity was protein or DNA; their results after centrifugation are shown below.

Note the following:

- Extracellular material is found in the supernatant.
- The y-axis shows the percentage of each radioactive element present in the supernatant; the remainder of each element ends up in the pellet.



Which of the following can be concluded from the results shown?

- A. No viral protein enters the infected bacterial cells.
- B. DNA has a greater mass than protein.
- C. Around 80% of the viral DNA enters the infected bacterial cells.
- D. Most proteins are separated from the bacterial cells by the blending process.

[1 mark]