

7.3 Translation

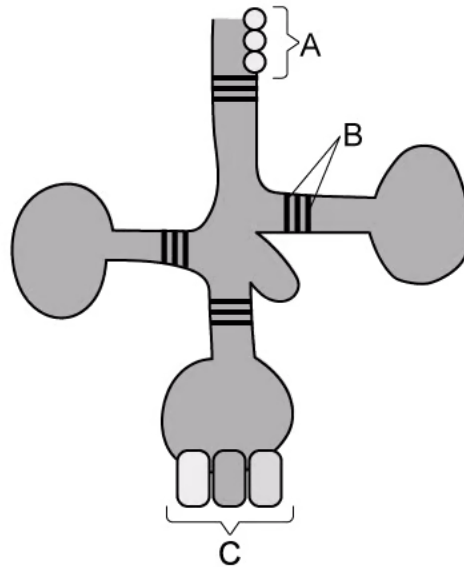
Question Paper

Course	DP IB Biology
Section	7. Nucleic Acids (HL Only)
Topic	7.3 Translation
Difficulty	Easy

Time allowed: 50
Score: /36
Percentage: /100

Question 1a

a)
The diagram below shows the structure of a tRNA molecule.



Identify the type of molecule that would bind to site **A**.

[1 mark]

[1 mark]

Question 1b

b)
i)
Identify the type of bond present at **B**.

[1 mark]

ii)
State the purpose of these bonds in a tRNA molecule.

[1 mark]

[2 marks]

Question 1c

c)
Describe the role of **C** in the process of translation.

[2 marks]

[2 marks]

Question 1d

d)
Before tRNA molecules can partake in translation, they bind to tRNA-activating enzymes.

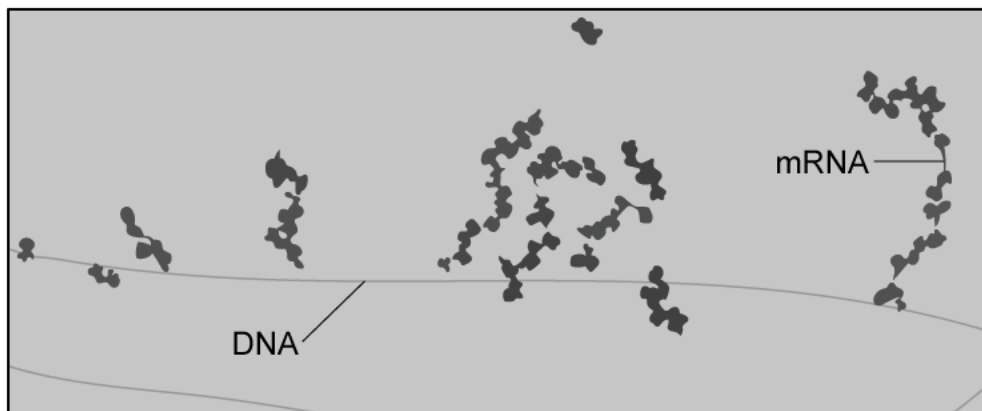
State the purpose of tRNA-activating enzymes.

[1 mark]

[1 mark]

Question 2a

a)
The following diagram shows polysomes.



Define the term 'polysome'.

[1 mark]

[1 mark]

Question 2b

b)

Polysomes are present in both prokaryotic and eukaryotic cells.

i)

Identify whether the polysomes in the diagram at part **a)** are prokaryotic or eukaryotic.

[1 mark]

ii)

State a reason for your answer at part **b) i)**.

[1 mark]

[2 marks]

Question 2c

c)

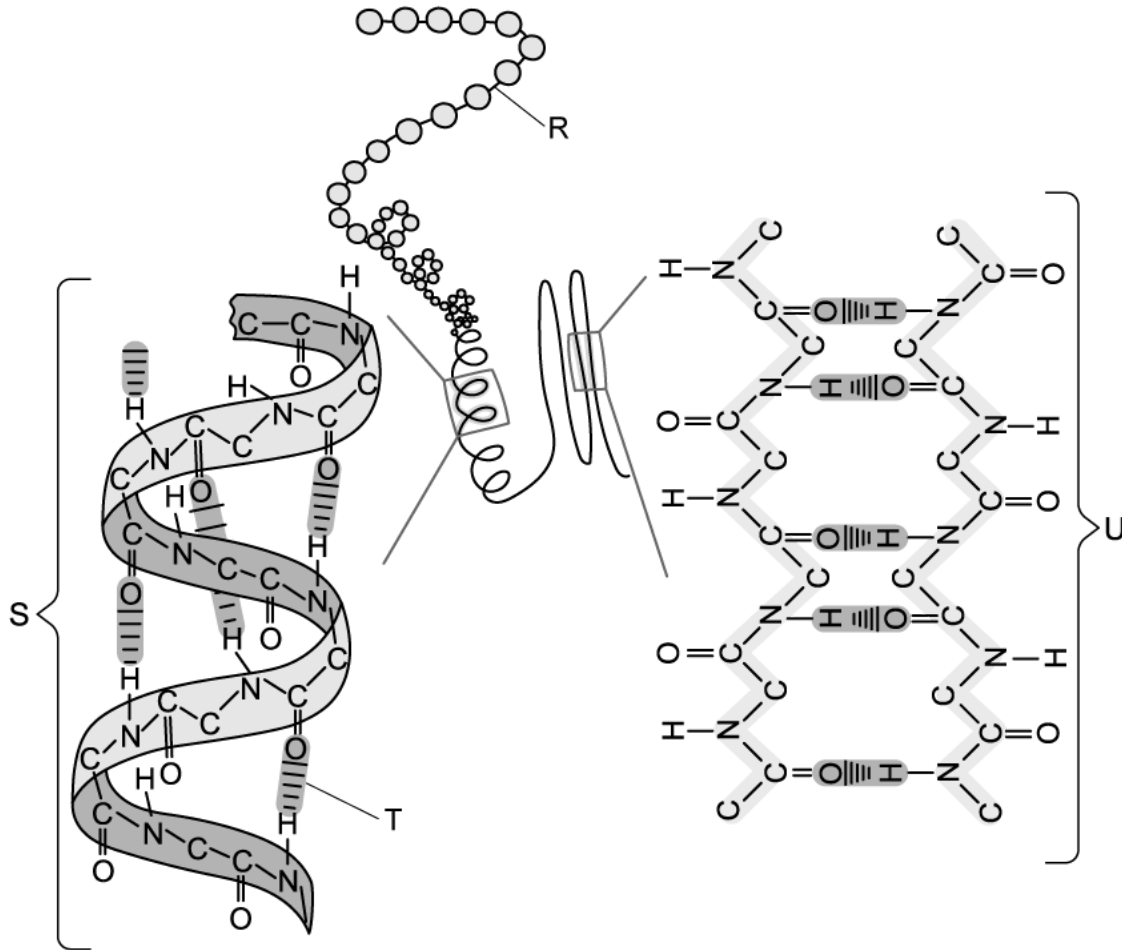
Describe **one** advantage of polysomes.

[1 mark]

[1 mark]

Question 3a

a)
The diagram below shows the secondary structure of a protein.



Identify structures **S** and **U**.

[2 marks]

[2 marks]

Question 3b

b)

The structure of a protein is held together by different types of chemical bonds.

Label the bonds **R** and **T** in the diagram.

[2 marks]

[2 marks]

Question 3c

c)

Describe how the bond at **T** forms and the way it contributes to the secondary structure of a protein.

[2 marks]

[2 marks]

Question 3d

d)

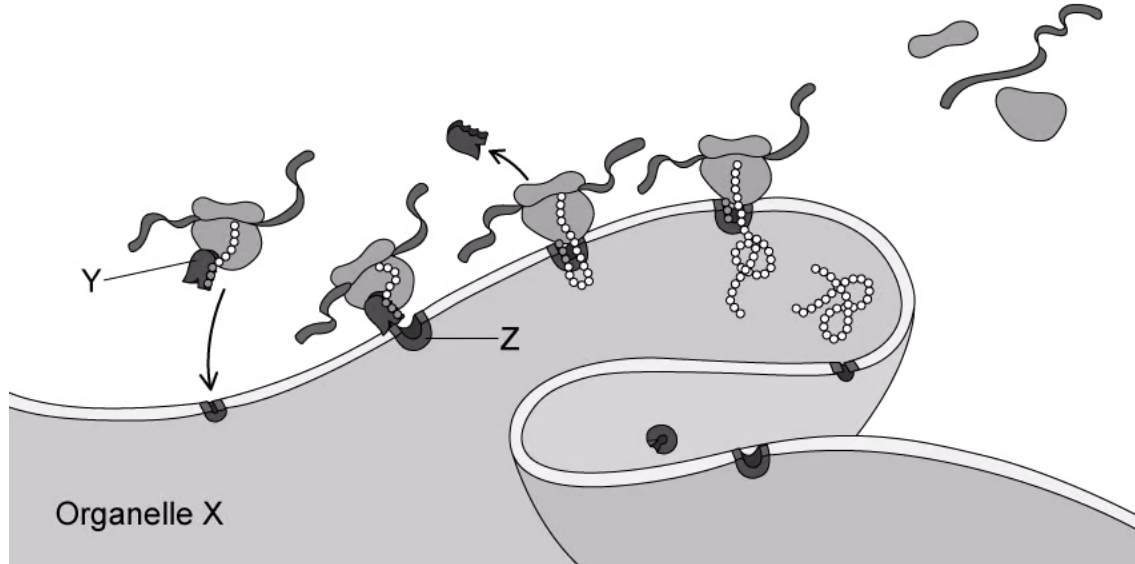
Explain how a mutation would affect the primary structure of a protein.

[1 mark]

[1 mark]

Question 4a

a)
The diagram below shows a ribosome producing proteins that are to be secreted from the cell. In order for this to occur, the ribosome must bind to organelle X.



State the name of organelle X.

[1 mark]

[1 mark]

Question 4b

b)
Binding to Y will result in the ribosome moving towards organelle X and binding to Z.

Identify Y and Z in the diagram.

[2 marks]

[2 marks]

Question 4c

c)

State the effect that binding to Y would have on the process of translation.

[1 mark]

[1 mark]

Question 4d

d)

Describe the path of the protein after it is produced, until it is secreted out of the cell.

[2 marks]

[2 marks]

Question 5a

One mark is available for clarity of communication throughout this question.

a)

Ribosomes play an important role during the process of translation.

Describe the structure of ribosomes.

[4 marks]

[4 marks]

Question 5b

b)

Outline the steps involved in the initiation of translation.

[3 marks]

[3 marks]

Question 5c

c)

Proteins are large, complex molecules that have several levels comprising their structure.

Describe the tertiary structure of proteins.

[6 marks]

[6 marks]