

APOLLO

Protein synthesis

SL

Biology

First assessment 2025

5 questions | questions

6. What occurs during translation?

- I. Polypeptides synthesised on ribosomes
 - II. RNA polymerase catalyses polypeptide synthesis
 - III. Complementary base pairing between codons and anticodons
- A. I and II only
 - B. I and III only
 - C. II and III only
 - D. I, II and III

Turn over

7. The table shows the genetic code.

		2nd base in codon				
		U	C	A	G	
1st base in codon	U	Phe	Ser	Tyr	Cys	U
		Phe	Ser	Tyr	Cys	C
		Leu	Ser	STOP	STOP	A
		Leu	Ser	STOP	Trp	G
	C	Leu	Pro	His	Arg	U
		Leu	Pro	His	Arg	C
		Leu	Pro	Gln	Arg	A
		Leu	Pro	Gln	Arg	G
	A	Ile	Thr	Asn	Ser	U
		Ile	Thr	Asn	Ser	C
		Ile	Thr	Lys	Arg	A
		Met	Thr	Lys	Arg	G
	G	Val	Ala	Asp	Gly	U
		Val	Ala	Asp	Gly	C
		Val	Ala	Glu	Gly	A
		Val	Ala	Glu	Gly	G

Which mRNA could code for the sequence Ser-Leu-Arg-Phe?

- A. UCA UCG UGG UUU
- B. UCC ACC AGA UUC
- C. UCU CCC AGA UUU
- D. UCG CUG AGG UUC

6. The table shows information on the genetic code of four different mRNA sequences. Which sequence demonstrates degeneracy in the genetic code?

	mRNA sequence	Amino acids
A.	UUU UUA UCU	Phe Leu Ser
B.	CUU CCU CUU	Leu Pro Leu
C.	AUG ACG AAG	Met Thr Lys
D.	GUU GGU GUG	Val Gly Val

Turn over

6. Which of the following is a consequence of the degeneracy of the genetic code?
- A. Codons affected by mutagens always code for non-functional proteins.
 - B. There are variations in the amino acid sequences for the same protein.
 - C. Some base mutations cause no changes in protein structure.
 - D. A codon may code for more than one amino acid in response to environmental changes.

Section A

Answer **all** questions. Answers must be written within the answer boxes provided.

2. (a) Some of the twenty amino acids that are linked together to make polypeptides in human cells are essential in the diet and others are not. Distinguish between essential and non-essential amino acids.

[2]

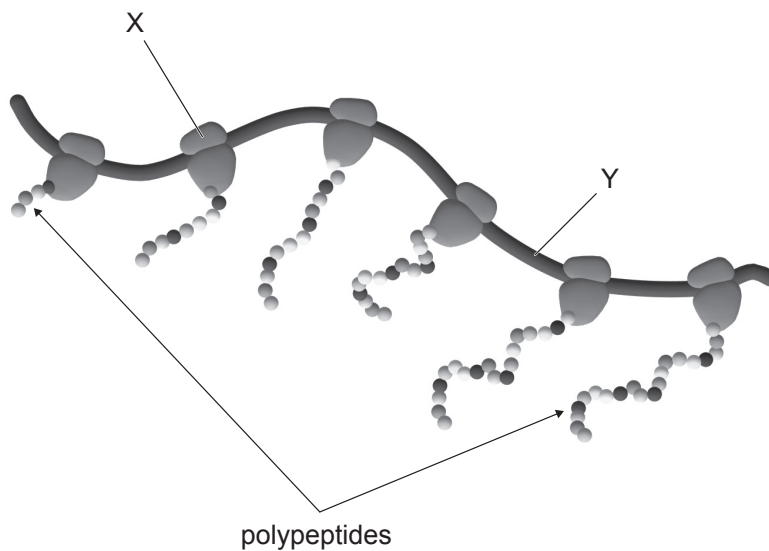
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The diagram represents the synthesis of proteins in the cytoplasm of a cell.



- (b) Identify X and Y.

[2]

X:

Y:

- (c) Six polypeptides are shown in the diagram. Explain the different lengths of these polypeptides.

[2]

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Turn over