6.2 Protein Synthesis

Question Paper

Course	CIE A Level Biology
Section	6. Nucleic Acids & Protein Synthesis
Topic	6.2 Protein Synthesis
Difficulty	Easy

Time allowed: 20

Score: /9

Percentage: /100

Question 1

Which enzyme is required for DNA transcription?

A Helicase

B RNA polymerase

C DNA ligase

D DNA polymerase

[1 mark]

Question 2

What molecule is the end product of translation

A tRNA

B mRNA

C polypeptide

D amino acid

[1 mark]

Question 3

Sickle cell disease is caused by a change in the DNA sequence. The haemoglobin of affected people has a valine amino acid in its ß chain rather than glutamic acid.

What is the minimum number of base substitutions required to change the normal haemoglobin allele to the sickle cell allele?

A 1

B 2

C 3

D 4

[1 mark]

Question 4

In a genetic engineering experiment a piece of double-stranded DNA containing 18000 nucleotides coding for a specific polypeptide is transcribed and translated.

What is the total number of amino acids in this polypeptide?

A 3000

B 6000

C 9000

D 18000

[1 mark]

Question 5

Which statement describes a process that occurs during protein synthesis?

A Translation is the synthesis of an mRNA molecule by base pairing of nucleotides with DNA.

B RNA polymerase catalyses formation of covalent bonds in transcription.

C Transcription is the linking together of amino acids coded by mRNA.

D Transcription is the linking together of free DNA nucleotides.

[1 mark]

Question 6

What does the process of translation require?

A amino acids, DNA and ribosomes

B ribosomes, mRNA and protein synthase

C mRNA, RNA polymerase and ribosomes

D ribosomes, mRNA and tRNA

[1 mark]

Question 7

In a DNA molecule, the base sequence TGT codes for the amino acid threonine.

What is the base sequence of the anti-codon on the tRNA to which threonine becomes attached?

A UCU

B TGT

C ACA

D UGU

[1 mark]

Question 8

A length of double-stranded DNA contains 180 nucleotides and codes for enzyme Z.

What is the maximum number of amino acids in enzyme X?

A 30

B 60

C 180

D 540

[1 mark]

Question 9

The protein p53 is also known as the 'Guardian of the Genome'. It is produced in response to DNA damage and helps prevent the formation of tumours.

Which of these could lead to an increase in the production of p53 in the body?

1 X-rays

2 Sunbeds

3 Smoking

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

[1 mark]