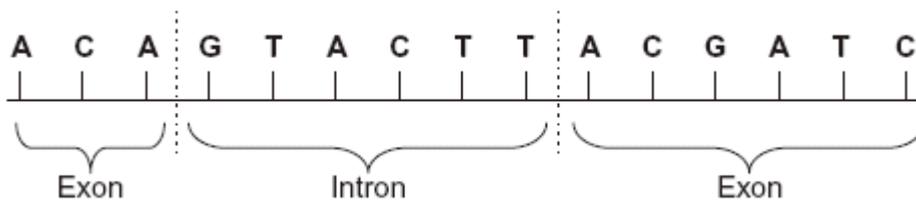


Q2. (a) Complete the table to show the differences between DNA, mRNA and tRNA.

Type of nucleic acid	Hydrogen bonds present (✓) or not present (✗)	Number of polynucleotide strands in molecule
DNA		
mRNA		
tRNA		

(2)

(b) The diagram shows the bases on one strand of a piece of DNA.



(i) In the space below, give the sequence of bases on the pre-mRNA transcribed from this strand.

(2)

(ii) In the space below, give the sequence of bases on the mRNA produced by splicing this piece of pre-mRNA.

(1)

(Total 5 marks)

Q3. The diagram shows a short sequence of DNA bases.

TTTGTATACTAGTCTACTTCGTTAATA

(a) (i) What is the maximum number of amino acids for which this sequence of DNA bases could code?

(1)

(ii) The number of amino acids coded for could be fewer than your answer to part (a)(i).

Give one reason why.

(1)

(b) Explain how a change in the DNA base sequence for a protein may result in a change in the structure of the protein.

(3)

Q4.

(a) (i) What is the role of RNA polymerase in transcription?

(1)

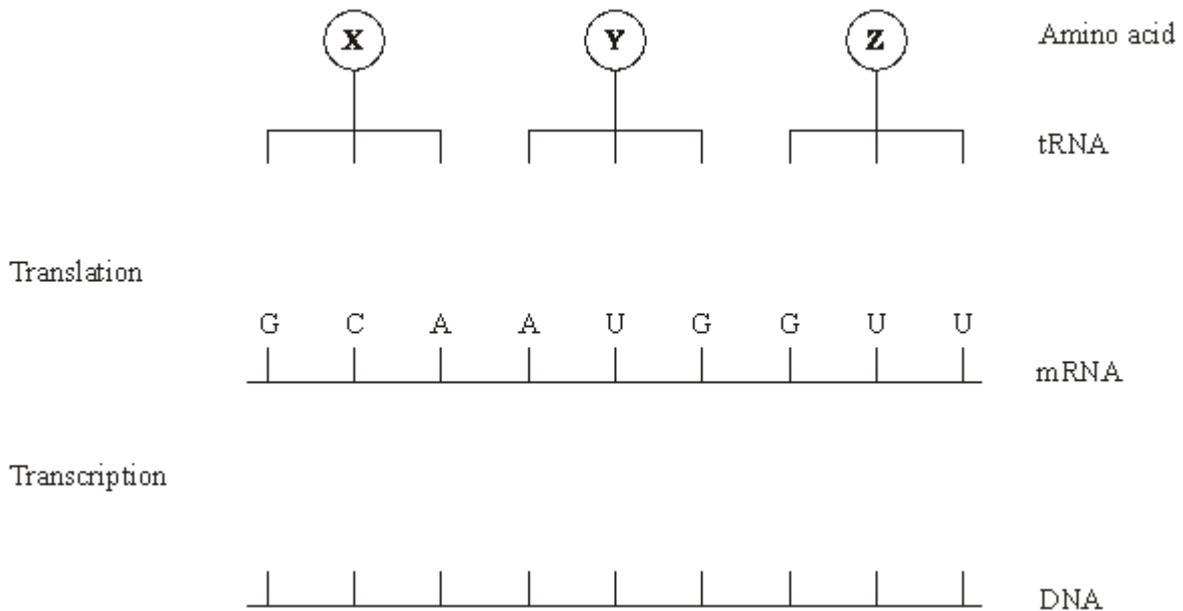
(ii) Name the organelle involved in translation.

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(1)

(b) Figure 1 shows some molecules involved in protein synthesis.

Figure 1



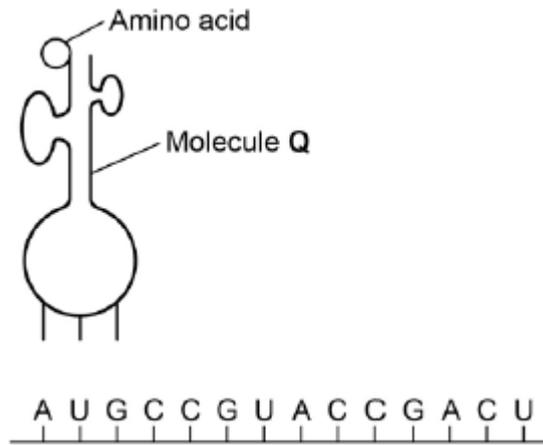
Complete Figure 1 to show

(i) the bases on the DNA strand from which the mRNA was transcribed;

(ii) the bases forming the anticodons of the tRNA molecules.

(2)

Q6. The diagram below represents one process that occurs during protein synthesis.



(a) Name the process shown.

(1)

(b) Identify the molecule labelled Q.

(1)

(c) In the diagram above, the first codon is AUG. Give the base sequence of:

the complementary DNA base sequence

the missing anticodon

(2)

