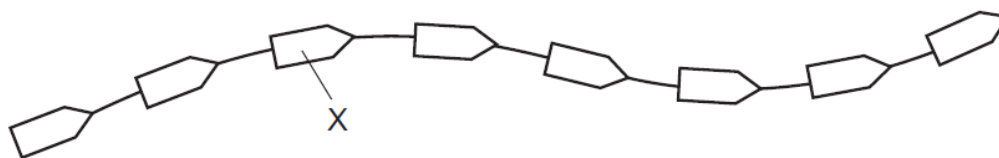


Biological molecules – 2023 June IGCSE 0610**1. June/2023/Paper_0610/11/No.9**

The diagram shows part of a protein molecule.



What does X represent?

- A** amino acid
- B** fatty acid
- C** glycerol
- D** sugar

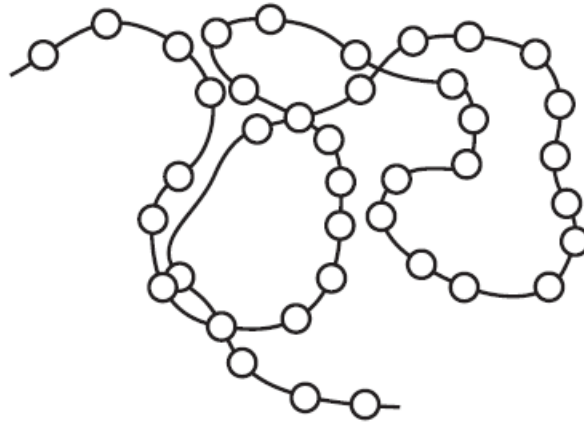
2. June/2023/Paper_0610/12/No.7

What is a role of water in digestion?

- A** It is an enzyme.
- B** It is a solvent.
- C** It is soluble.
- D** It is a mineral.

3. [June/2023/Paper_0610/12/No.9](#)

The diagram represents a protein molecule.



What do the small circles represent?

- A** amino acids
- B** fatty acids
- C** glycerol
- D** simple sugars

4. [June/2023/Paper_0610/12/No.21](#)

What are features of gas exchange surfaces in animals?

- A** thick-walled and large surface area
- B** thick-walled and small surface area
- C** thin-walled and small surface area
- D** thin-walled and large surface area

5. June/2023/Paper_0610/13/No.9

Four different foods were tested to find out what they contained.

The results are shown in the table.

Which food contains protein but **not** reducing sugar or starch?

	Benedict's solution test	iodine solution test	biuret test
A	blue	black	purple
B	blue	brown	purple
C	brick-red	black	blue
D	brick-red	brown	blue

6. June/2023/Paper_0610/13/No.16

Which of these is digested by protease?

A ■

B ●

C ■—■—■—■

D ●—●—●—●

key

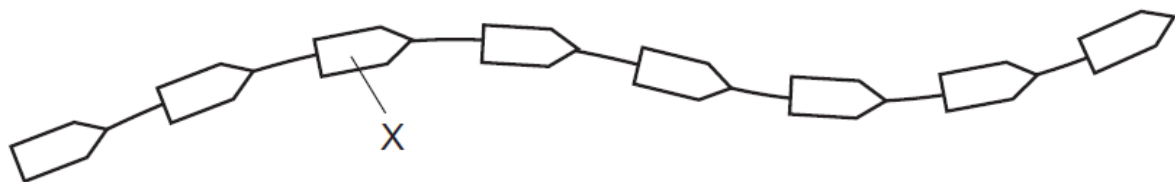
■ amino acid

● glucose

— chemical bond

7. [June/2023/Paper_0610/21/No.7](#)

The diagram shows part of a protein molecule.



What does X represent?

- A** amino acid
- B** fatty acid
- C** glycerol
- D** sugar

8. [June/2023/Paper_0610/21/No.8](#)

The structure of DNA involves two strands coiled together to form a double helix.

Which pairing of bases between the two strands is correct?

- A** A and G
- B** A and T
- C** C and A
- D** C and T

9. [June/2023/Paper_0610/22/No.8](#)

DNA contains pairs of bases.

Which pair shows a correct combination of bases?

- A** A and C
- B** C and G
- C** G and A
- D** T and G

10. June/2023/Paper_0610/22/No.30

The following are involved in protein synthesis.

- 1 amino acids assembled in order
- 2 mRNA moves to the cytoplasm
- 3 mRNA passing through a ribosome
- 4 DNA in the nucleus

In which order do they become involved when proteins are made?

- A** 1 → 3 → 2 → 4
- B** 3 → 2 → 1 → 4
- C** 4 → 2 → 3 → 1
- D** 4 → 3 → 2 → 1

11. June/2023/Paper_0610/23/No.7

The table shows the results of food tests carried out on a fruit.

test	Benedict's solution	biuret	ethanol emulsion	iodine solution
result	positive	positive	negative	negative

What did the fruit contain?

- A** fat and reducing sugar
- B** fat and starch
- C** protein and reducing sugar
- D** protein and starch

12. June/2023/Paper_0610/23/No.8

What describes the structure of DNA?

- A** Each strand contains chemicals called fatty acids.
- B** Each strand contains a sequence of amino acids.
- C** Each strand contains mRNA.
- D** Two strands coil to form a double helix.

13. June/2023/Paper_0610/41/No.5a

(a) Fig. 5.1 shows the stages involved in protein synthesis.

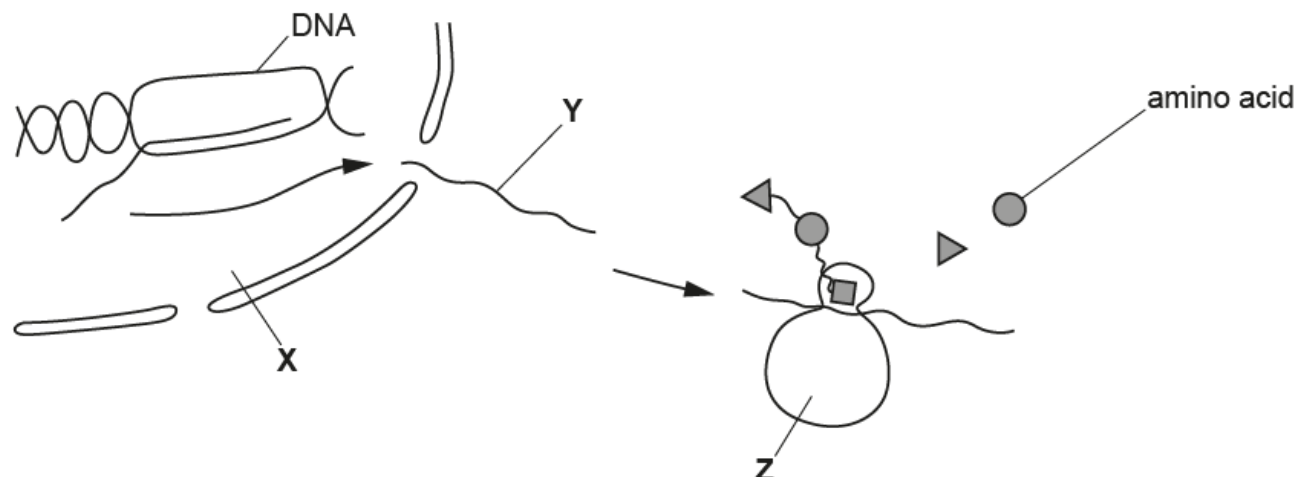


Fig. 5.1

(i) State the names of the parts labelled X, Y and Z in Fig. 5.1.

X

Y

Z

[3]

(ii) State what determines the sequence of the amino acids in the protein that is produced.

.....

.....

..... [1]

(iii) Explain why the sequence of amino acids is important in the production of receptor molecules for neurotransmitters.

.....

.....

.....

.....

..... [2]

14. June/2023/Paper_0610/42/No.2

Fig. 2.1 is a diagram of part of a DNA molecule.



Fig. 2.1

(a) Draw a circle on Fig. 2.1 to identify **one** pair of bases.

[1]

(b) The percentage of **T** bases in the DNA of a species is 29%.

Calculate the percentage of bases that would be base **G** in the DNA of this species.

Space for working.

G% [1]

(c) (i) State the name given to a length of DNA that codes for a protein.

..... [1]

(ii) Explain how proteins are made by a cell.

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
..... [5]

(iii) DNA controls cell function by controlling the production of proteins.

State **two** types of cell membrane proteins.

1

2

[2]

[Total: 10]

15. June/2023/Paper_0610/43/No.7

- (a) State the name of a chemical element that is found in all proteins but **not** in carbohydrates or fats.

..... [1]

- (b) Table 7.1 shows the names of some biological molecules, enzymes and the organs that produce the enzymes.

Complete Table 7.1.

Table 7.1

large biological molecule	products of the breakdown of the large biological molecule	enzyme that catalyses the breakdown of the large biological molecule	organ that produces the enzyme
oil			pancreas
glycogen		glycogen phosphorylase	liver
	maltose	amylase	
protein			stomach

[4]

- (c) State **two** hormones that can affect the concentration of glycogen in the liver.

1

2

[2]

[Total: 7]

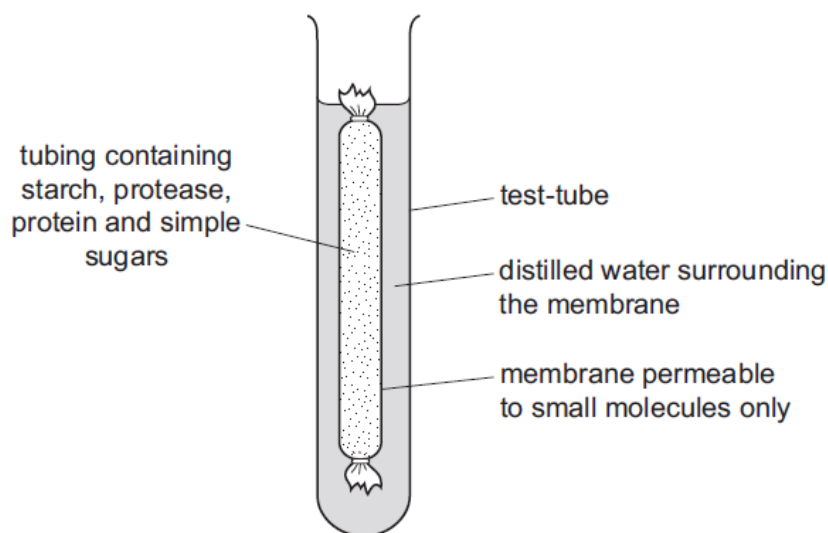
16. March/2023/Paper_0610/12/No.9

Which substance is used to test a food for vitamin C?

- A Benedict's solution
- B DCPIP
- C ethanol
- D iodine solution

17. March/2023/Paper_0610/12/No.16

The diagram shows the apparatus used in an experiment. The apparatus was kept at 35 °C.



What is likely to be present in the water surrounding the membrane after 45 minutes?

- A amino acids and simple sugars
- B protein and amino acids
- C protein and simple sugars
- D starch and simple sugars

18. March/2023/Paper_0610/22/No.7

Which substance is used to test a food for vitamin C?

- A Benedict's solution
- B DCPIP
- C ethanol
- D iodine solution

19. March/2023/Paper_0610/22/No.30

Which statement about the synthesis of a protein molecule in a cell is correct?

- A The gene coding for the protein moves from nucleus to cytoplasm.
- B Ribosomes assemble amino acids into DNA molecules.
- C mRNA remains in the nucleus.
- D The sequence of amino acids is determined by the sequence of bases in the mRNA.

20. March/2023/Paper_0610/33/No.1

- (a) The nutrient content of five different foods was analysed.

The mass of each nutrient per 100g of food was estimated.

Table 1.1 shows the results.

Table 1.1

	mass of nutrient per 100g of food /g			
food	carbohydrates	fats	protein	fibre
A	12	1	5	6
B	23	8	14	2
C	0	36	25	0
D	7	54	28	7
E	21	7	5	8

The recommended daily allowance for these nutrients for an adult is:

- fat – a maximum of 70g per day
- protein – 50g per day.

- (i) Identify the food in Table 1.1 which contains the most carbohydrate per 100g.

..... [1]

- (ii) A person eats 200g of each food.

Using the information in Table 1.1, identify the **two** foods that would provide **more** than the recommended daily allowance of fat.

..... and

[2]

- (iii) Using the information in Table 1.1, calculate the number of grams of food **C** needed to provide the recommended daily allowance of protein.

..... g [1]

- (iv) State **two** groups of nutrients missing from Table 1.1 that are needed as part of a balanced diet.

1

2

[2]

- (v) Explain why food **E** is recommended as part of a balanced diet.

.....

 [3]

- (b) Most foods contain some carbohydrates.

State the names of the chemical elements contained in carbohydrates.

..... [1]

- (c) Starch is a type of carbohydrate.

Circle the names of **two** other carbohydrates from the list.

amino acids

amylase

cellulose

ethanol

glycogen

oil

protein

urea

[2]

[Total: 12]