Biological molecules – 2021 IGCSE 0610

1. March/2021/Paper_12/No.9

Four foods were tested for each of these nutrients:

fat (using the ethanol emulsion test)

protein (using the biuret test)

reducing sugar (using Benedict's solution).

Which food contains protein and fat?

	colour of result of food test		
	purple	brick-red	milky-white
A	✓	✗	✓
B	✓	✗	✗
C	✗	✓	✓
D	✗	✓	✗

key

✓ = nutrient present

✗ = nutrient absent

2. March/2021/Paper_22/No.34

A sunflower has 17 chromosomes in each pollen nucleus. These nuclei are produced by the process of ……1…… in the anthers. They are genetically ……2…… all the pollen nuclei produced by those anthers. After fertilisation the resulting zygote will have ……3…… chromosomes.

Which row correctly completes gaps 1, 2 and 3?

	1	2	3
A	meiosis	identical to	34
B	meiosis	different from	34
C	mitosis	identical to	17
D	mitosis	different from	34

3. March/2021/Paper_22/No.33

The statements describe steps in protein synthesis.

1 Copies of the gene are carried to the cytoplasm as mRNA molecules.

2 Each ribosome assembles amino acids into a protein molecule.

3 The gene coding for a protein is copied in the nucleus.

4 The mRNA molecules pass through ribosomes.

Which sequence of steps is correct?

A 1 → 2 → 4 → 3

B 1 → 3 → 2 → 4

C 3 → 1 → 4 → 2

D 3 → 4 → 2 → 1

4. March/2021/Paper_22/No.32

What is defined as 'a thread-like structure of DNA, carrying genetic information in the form of genes'?

A allele

B chromosome

C protein

D zygote

5. June/2021/Paper_11/No.9
Which element is found in proteins but **not** carbohydrates?

A carbon

B hydrogen

C nitrogen

D oxygen

6. June/2021/Paper_11/No.10
Starch is digested by amylase in the mouth, but it is not digested in the stomach.

What is the reason for this?

A All starch digestion is completed in the mouth.

B The pH in the stomach is not suitable for the amylase to work.

C The starch does not stay in the stomach long enough to be digested.

D The temperature in the stomach is not suitable for the amylase to work.

7. June/2021/Paper_11/No.15
What are the products when proteins are broken down?

A amino acids

B fatty acids

C glycerol

D simple sugars

8. June/2021/Paper_12/No.9
Which element is found in proteins but **not** carbohydrates?

A carbon

B hydrogen

C nitrogen

D oxygen

9. June/2021/Paper_13/No.9
Which element is found in proteins but **not** carbohydrates?

A carbon

B hydrogen

C nitrogen

D oxygen

10. June/2021/Paper_13/No.11

Which type of molecule are enzymes made of?

A carbohydrate

B fat

C protein

D vitamin

11. June/2021/Paper_21/No.2

The table shows a section of DNA taken from four different organisms.

organism	base sequence									
W	C	A	C	A	A	T	C	G	A	A
X	G	T	C	A	A	T	G	G	T	G
Y	C	T	C	A	A	T	C	G	T	A
Z	C	T	C	A	T	T	C	G	T	A

Which two organisms are the most distantly related to each other?

A W and X **B** W and Z **C** X and Y **D** X and Z

12. June/2021/Paper_21/No.9

Which element is found in proteins but **not** carbohydrates?

A carbon

B hydrogen

C nitrogen

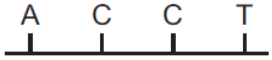
D oxygen

13. June/2021/Paper_21/No.10

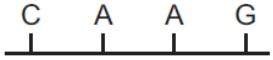
The diagram shows a short section of a single strand of DNA.

Which strand of DNA will combine with this strand to form part of a double helix?

A

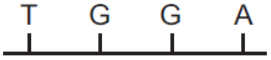


B



C

D



14. June/2021/Paper_22/No.9

Which element is found in proteins but **not** carbohydrates?

A carbon

B hydrogen

C nitrogen

D oxygen

15. June/2021/Paper_22/No.10

The sequence of the bases present on one strand of a DNA molecule is shown.

ATTGGACGGT

Which sequence shows the bases present on the opposite strand?

A CGGTTCATTG

B TCCAATGAAC

C TAACCTGCCA

D ATTGGACGGT

16. June/2021/Paper_23/No.9

Which element is found in proteins but **not** carbohydrates?

A carbon

B hydrogen

C nitrogen

D oxygen

17. June/2021/Paper_23/No.10

A DNA sample was tested to identify its bases.

35% of the bases in the DNA were G.

Which row shows the percentages of the other bases?

	percentage of bases		
	A	C	T
A	15	15	35
B	15	35	15
C	35	15	35
D	35	35	15

18. June/2021/Paper_43/No.2

Insulin is a protein made by cells in the pancreas.

Fig. 2.1 shows how insulin is made in a pancreatic cell.

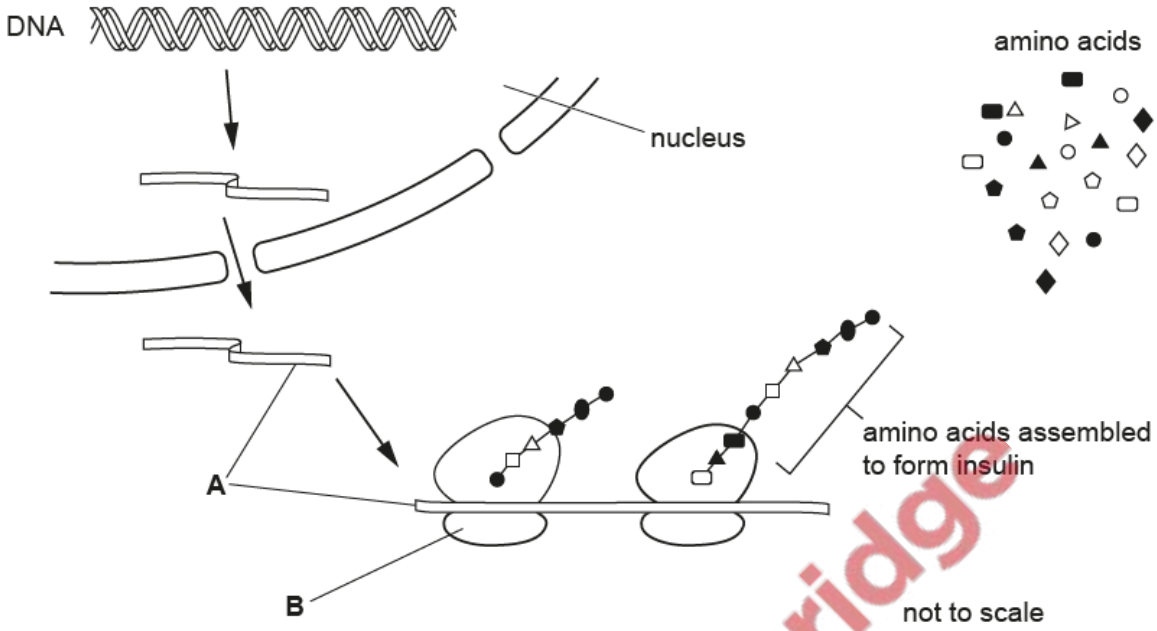


Fig. 2.1

(a) (i) State the name of molecule **A** in Fig. 2.1.

..... [1]

(ii) State the name of structure **B** in Fig. 2.1.

..... [1]

(iii) Explain the role of molecule **A** in protein synthesis, as shown in Fig. 2.1.

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..... [3]

(b) Insulin is secreted from cells in the pancreas when the concentration of glucose in the blood increases.

Outline the role of insulin.

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..... [4]

(c) State the names of **two** substances, **other than** insulin, that are secreted by the pancreas.

1 .....

2 .....

[2]

[Total: 11]