

Chapter 4

Biological molecules

4.1 Biological molecules

01. 0610_m22_qp_22 Q: 7

Which row is correct for a positive food test for vitamin C?

	colour of the food test reagent at the start	heat required	final colour of the food test reagent
A	colourless	yes	purple
B	blue	no	colourless
C	colourless	no	blue
D	blue	yes	orange

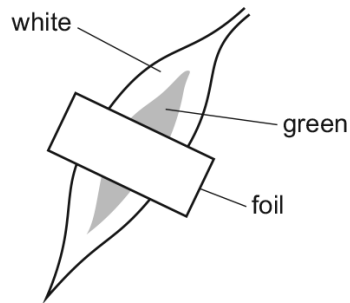
02. 0610_m22_qp_22 Q: 8

In which molecule are cross-links formed between bases?

- A** carbohydrate
- B** DNA
- C** fat
- D** glycogen

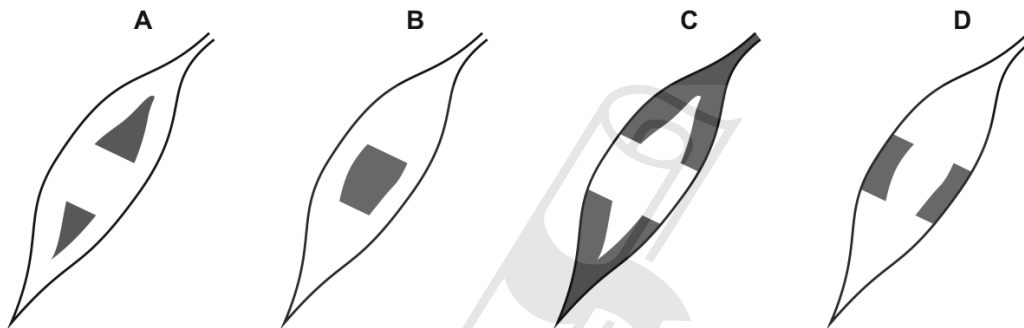
03. 0610_m22_qp_22 Q: 11

A piece of foil was placed over one green and white leaf on a plant.



The plant was placed under a bright light for 24 hours and then tested for starch with iodine solution.

Which diagram shows the areas of the leaf that would stain blue-black with iodine solution?



04. 0610_m21_qp_22 Q: 9

The bases on one strand of a DNA molecule have the sequence CAGCT.

What is the sequence of bases on the other strand?

- A** CAGCT **B** GTCGA **C** TGATC **D** GCTAG

05. 0610_s21_qp_21 Q: 9

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

- A** carbon
B hydrogen
C nitrogen
D oxygen

09. 0610_s21_qp_22 Q: 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
-

10. 0610_s21_qp_23 Q: 9

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

- A carbon
 - B hydrogen
 - C nitrogen
 - D oxygen
-

11. 0610_s21_qp_23 Q: 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

4.1. BIOLOGICAL MOLECULES

12. 0610_w21_qp_21 Q: 8

The bases on one of the strands of a DNA molecule have the sequence shown.

A-A-T-C-T-G

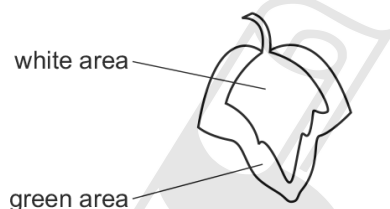
What is the corresponding sequence of bases on the other strand?

- A A-A-T-C-T-G
- B C-C-G-A-G-T
- C G-G-C-T-C-A
- D T-T-A-G-A-C

13. 0610_w21_qp_21 Q: 9

In a photosynthesis experiment, a plant is left in bright sunlight for several hours. A leaf is then removed from the plant and tested for starch, using iodine solution.

The diagram shows the leaf from the plant that was used in the experiment.



Which diagram shows the result of the experiment?



14. 0610_w21_qp_23 Q: 8

The bases on one of the strands of a DNA molecule have the sequence shown.

A-A-T-C-T-G

What is the corresponding sequence of bases on the other strand?

- A A-A-T-C-T-G
 - B C-C-G-A-G-T
 - C G-G-C-T-C-A
 - D T-T-A-G-A-C
-

15. 0610_m20_qp_22 Q: 9

A test was performed on a food substance. A positive result was shown by a colour change to blue-black.

What solution was used for the test?

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

16. 0610_p20_qp_20 Q: 8

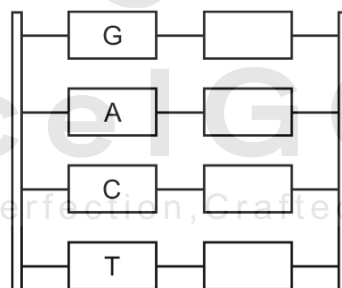
One strand of a DNA molecule contains the base sequence AGT.

What is the base sequence on the other strand of the DNA molecule?

- A AGT
- B GAT
- C TAC
- D TCA

17. 0610_s20_qp_21 Q: 7

The diagram shows a section of DNA, with four bases identified on one strand.



Which sequence of bases would be on the other strand, starting from the top?

- A AGTC
- B CTGA
- C GACT
- D TCAG

4.1. BIOLOGICAL MOLECULES

18. 0610_s20_qp_21 Q: 8

Which food-testing solution shows a positive result when it turns from blue to purple?

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

19. 0610_w20_qp_21 Q: 7

Which substances are made by linking together glucose molecules only?

- A cellulose, glycogen and starch
 - B fats, cellulose and proteins
 - C proteins, oils and glycogen
 - D starch, fats and oils
-

20. 0610_w20_qp_21 Q: 8

When bases pair up in the formation of DNA, what is one of the pairings?

- A G with A
 - B G with C
 - C G with G
 - D G with T
-

21. 0610_w20_qp_22 Q: 7

Which substances are made by linking together glucose molecules only?

- A cellulose, glycogen and starch
 - B fats, cellulose and proteins
 - C proteins, oils and glycogen
 - D starch, fats and oils
-

22. 0610_w20_qp_22 Q: 8

When bases pair up in the formation of DNA, what is one of the pairings?

- A G with A
 - B G with C
 - C G with G
 - D G with T
-

23. 0610_m19_qp_22 Q: 9

Which statement about biological molecules is correct?

- A DNA contains the bases A, C, G and T.
 - B Glycogen is made from glycerol molecules.
 - C Oils are made from amino acids and glucose.
 - D Proteins are made from fatty acids.
-

24. 0610_s19_qp_21 Q: 8

Four solutions were tested to see whether they contained protein, starch or glucose.

The colours of the solutions after the tests are recorded in the table.

Which solution contained protein and glucose but **not** starch?

	biuret test	iodine test	Benedict's test
A	blue	brown	orange
B	blue	blue-black	blue
C	purple	brown	orange
D	purple	blue-black	blue

25. 0610_s19_qp_21 Q: 9

Small molecules are used as the basic units in the synthesis of large food molecules.

Which statement is correct?

- A** Amino acids are basic units of carbohydrates.
- B** Fatty acids are basic units of glycogen.
- C** Glycerol is a basic unit of oils.
- D** Simple sugar is a basic unit of protein.

26. 0610_s19_qp_22 Q: 8

Which row shows the chemical elements contained in fats?

	carbon	hydrogen	nitrogen	oxygen	
A	✓	✓	x	✓	key
B	✓	✓	✓	✓	✓ = present
C	x	✓	✓	x	x = absent
D	✓	x	✓	✓	

4.1. BIOLOGICAL MOLECULES

27. 0610_s19_qp_22 Q: 9

Small molecules are used as the basic units in the synthesis of large food molecules.

Which statement is correct?

- A Amino acids are basic units of carbohydrates.
- B Fatty acids are basic units of glycogen.
- C Glycerol is a basic unit of oils.
- D Simple sugar is a basic unit of protein.

28. 0610_s19_qp_23 Q: 8

Which reagent is used when testing a food for vitamin C?

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

29. 0610_w19_qp_21 Q: 8

Which identifies the chemical elements found in proteins?

	carbon	hydrogen	oxygen	nitrogen
A	✓	✓	✓	✓
B	✓	✓	✓	x
C	✓	x	✓	x
D	x	✓	x	✓

key

✓ = present

x = absent

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30. 0610_w19_qp_22 Q: 9

A student carries out a test to see whether the solution in a test-tube contains protein.

Which row shows the correct food test and a positive result?

	name of test	colour seen with a positive result
A	Benedict's test	blue-black
B	Benedict's test	purple
C	biuret test	blue-black
D	biuret test	purple

31. 0610_m18_qp_22 Q: 8

When a food substance is tested with iodine solution, which colour shows the presence of starch?

- A blue-black
- B brown
- C orange
- D purple

32. 0610_s18_qp_21 Q: 9

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

test	Benedict's	biuret	ethanol	iodine
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

33. 0610_w18_qp_21 Q: 7

The data show the concentrations of sugar and starch in an onion.

total sugar including reducing sugar /g per 100g	starch /g per 100g
3.7	0.0

The onion is tested with Benedict's solution and iodine solution.

Which set of results is correct?

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

4.1. BIOLOGICAL MOLECULES

34. 0610_w18_qp_21 Q: 8

Which statement about the structure of DNA is correct?

- A Base A always pairs with base C.
 - B Base A always pairs with base T.
 - C It consists of proteins.
 - D It forms a single helix.
-

35. 0610_w18_qp_22 Q: 8

The base sequence of part of one strand of a DNA molecule is shown.

ATAGCC

What is the base sequence of the other strand?

- A GCGATT
 - B CGCTAA
 - C TATCGG
 - D ATAGCC
-

36. 0610_w18_qp_22 Q: 25

What is a response to a low concentration of glucose in the blood?

- A Glucagon will cause the body to convert glucose into glycogen.
 - B Glucagon will cause the body to convert glycogen into glucose.
 - C Insulin will cause the body to convert glucose into glycogen.
 - D Insulin will cause the body to convert glycogen into glucose.
-

37. 0610_w18_qp_23 Q: 8

Which processes depend on the fact that water is a solvent?

	evaporation from the spongy mesophyll cells	glucose transported in blood plasma	movement of water by osmosis	loss of sweat from the skin surface
A	✓	✓	✓	✓
B	✓	✓	✓	x
C	✓	x	x	✓
D	x	✓	✓	x

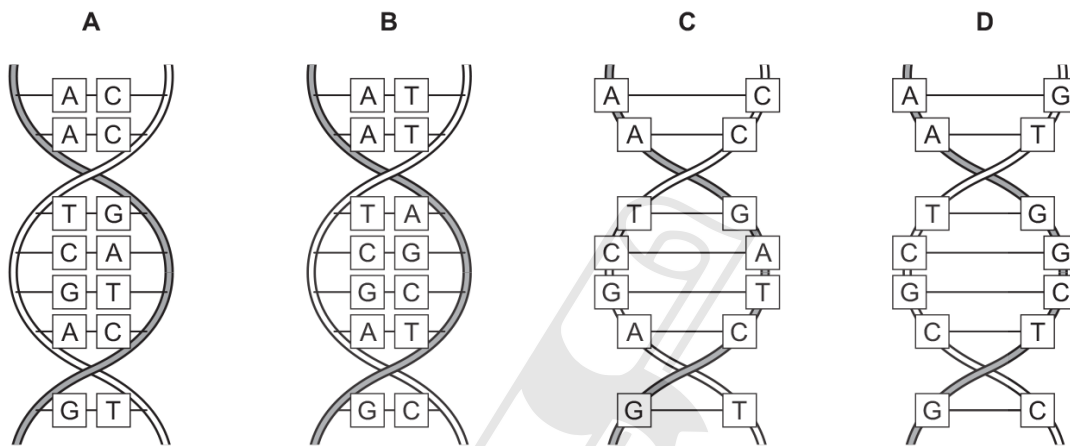
38. 0610_m17_qp_22 Q: 8

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

- A carbon
- B hydrogen
- C nitrogen
- D oxygen

39. 0610_s17_qp_21 Q: 6

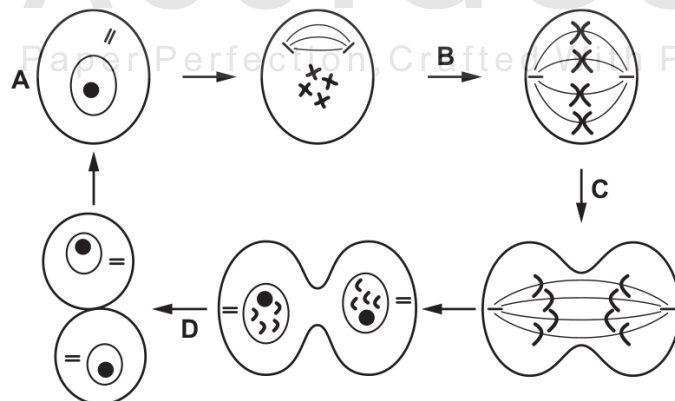
Which diagram shows the structure of DNA?



40. 0610_w17_qp_22 Q: 8

The diagram shows a cell before and during mitosis.

At which stage are the chromosomes copied?



4.1. BIOLOGICAL MOLECULES

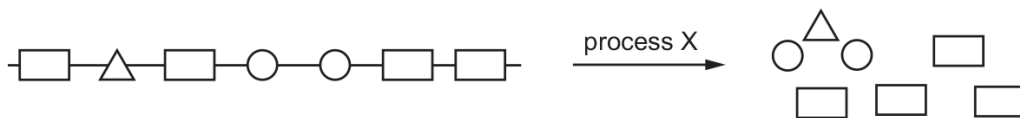
41. 0610_w17_qp_23 Q: 8

What is the colour change shown by Benedict's solution when heated with a reducing sugar?

- A blue to purple
 - B blue to red
 - C brown to blue-black
 - D red to yellow
-

42. 0610_m16_qp_22 Q: 9

The diagram shows a large food molecule changing into smaller molecules.



What is process X?

- A absorption
 - B chewing
 - C digestion
 - D secretion
-

43. 0610_p16_qp_20 Q: 8

One strand of a DNA molecule contains the base sequence AGT.

What is the base sequence on the other strand of the DNA molecule?

- A AGT
 - B GAT
 - C TAC
 - D TCA
-

44. 0610_s16_qp_21 Q: 9

Small molecules are used as the basic units in the synthesis of large food molecules.

Which statement is correct?

- A Amino acids are basic units of carbohydrates.
 - B Fatty acids are basic units of glycogen.
 - C Glycerol is a basic unit of oils.
 - D Simple sugar is a basic unit of protein.
-

45. 0610_s16_qp_22 Q: 7

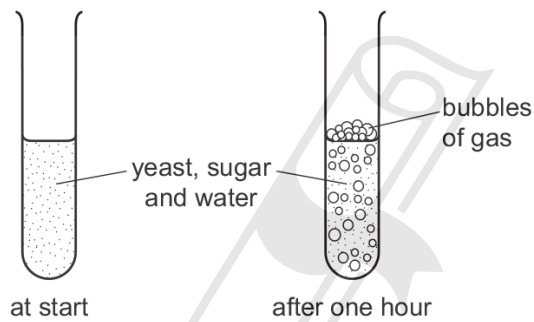
The structures of antibodies, DNA molecules and enzymes are specific to their actions.

Which feature of each molecule makes it specific?

	antibody	DNA	enzyme
A	active site	binding site	base order
B	base order	active site	binding site
C	base order	binding site	active site
D	binding site	base order	active site

46. 0610_s16_qp_23 Q: 1

Some yeast, sugar and water are mixed in a test-tube. The diagrams show the test-tube at the start and after one hour.



Which process causes this change?

- A** growth
- B** reproduction
- C** respiration
- D** sensitivity

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47. 0610_s16_qp_23 Q: 7

The diagram shows the order of bases along part of one strand of DNA.

A—C—T—T—A—G—A—T

What is the order of bases on the corresponding part of the other strand?

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

4.1. BIOLOGICAL MOLECULES

48. 0610_s16_qp_23 Q: 8

Small molecules are used as the basic units in the synthesis of large food molecules.

Which statement is correct?

- A** Amino acids are basic units of carbohydrates.
 - B** Fatty acids are basic units of glycogen.
 - C** Glycerol is a basic unit of oils.
 - D** Simple sugar is a basic unit of protein.
-

49. 0610_w16_qp_23 Q: 9

How does a plant use the sugar that it makes?

	stored as starch	used for photosynthesis	used for respiration	used to make cellulose
A	✓	✓	✓	x
B	✓	✓	x	✓
C	✓	x	✓	✓
D	x	✓	✓	✓

SN	Paper	Q. No.	Answer
01	0610_m22_qp_22	7	B
02	0610_m22_qp_22	8	B
03	0610_m22_qp_22	11	A
04	0610_m21_qp_22	9	B
05	0610_s21_qp_21	9	C
06	0610_s21_qp_21	10	C
07	0610_s21_qp_21	13	A
08	0610_s21_qp_22	9	C
09	0610_s21_qp_22	10	C
10	0610_s21_qp_23	9	C
11	0610_s21_qp_23	10	B
12	0610_w21_qp_21	8	D
13	0610_w21_qp_21	9	C
14	0610_w21_qp_23	8	D
15	0610_m20_qp_22	9	C
16	0610_p20_qp_20	8	D
17	0610_s20_qp_21	7	B
18	0610_s20_qp_21	8	B
19	0610_w20_qp_21	7	A
20	0610_w20_qp_21	8	B
21	0610_w20_qp_22	7	A
22	0610_w20_qp_22	8	B
23	0610_m19_qp_22	9	A
24	0610_s19_qp_21	8	C
25	0610_s19_qp_21	9	C
26	0610_s19_qp_22	8	A
27	0610_s19_qp_22	9	C
28	0610_s19_qp_23	8	B
29	0610_w19_qp_21	8	A
30	0610_w19_qp_22	9	D
31	0610_m18_qp_22	8	A
32	0610_s18_qp_21	9	C
33	0610_w18_qp_21	7	D
34	0610_w18_qp_21	8	B
35	0610_w18_qp_22	8	C
36	0610_w18_qp_22	25	B
37	0610_w18_qp_23	8	D
38	0610_m17_qp_22	8	C
39	0610_s17_qp_21	6	B
40	0610_w17_qp_22	8	A
41	0610_w17_qp_23	8	B
42	0610_m16_qp_22	9	C
43	0610_p16_qp_20	8	D
44	0610_s16_qp_21	9	C
45	0610_s16_qp_22	7	D
46	0610_s16_qp_23	1	C
47	0610_s16_qp_23	7	D
48	0610_s16_qp_23	8	C
49	0610_w16_qp_23	9	C