

DNA and the genome: practice questions

5 questions · 12 marks · mark scheme at the back

For Edexcel GCSE Biology 1BI0 and Combined Science 1SC0. **Triple only** is not in Combined Science. **Higher tier** is only on the Higher paper.

Name

Total / 12

1 What joins the two strands of a DNA molecule together? [1 mark]

- A. ☐ Strong covalent bonds between sugar groups
- B. ☐ Weak hydrogen bonds between bases
- C. ☐ Strong covalent bonds between phosphate groups
- D. ☐ Weak hydrogen bonds between sugar groups

2 Describe the structure of a DNA molecule. [3 marks]

3 A section of one strand of DNA has the base sequence A T G C C A. (a) Write the base sequence of the complementary strand. (1) (b) Name the type of bond that holds the two strands together. (1) [2 marks]

4 State what is meant by (a) the genome of an organism (1) and (b) a gene (1). [2 marks]

5 Describe how DNA can be extracted from a strawberry.

[4 marks]

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Mark scheme

One mark for each point unless a maximum is given. Words in brackets are not needed for the mark.

1. [1]

B B: Weak hydrogen bonds between bases (1)

2. [3]

- two strands coiled to form a double helix (1)
- strands linked by complementary base pairs joined by (weak) hydrogen bonds (1)
- made of nucleotides, each consisting of a sugar and phosphate group (1)
- with one of four different bases attached to the sugar (1)
- Max 3

3. [2]

- (a) T A C G G T (1)
- (b) hydrogen (bonds) (1)

4. [2]

- (a) the entire DNA of an organism (1)
- (b) a section of a DNA molecule that codes for a specific protein (1)

5. [4]

- mash / crush the strawberry (1)
- add detergent (and salt) to break down cell membranes / release DNA (1)
- filter to remove solid pieces (1)
- add ice-cold ethanol (1)
- DNA appears as white stringy strands / precipitate (1)
- Max 4