

Biological molecules practice questions

7 questions • 22 marks • mark scheme at the back

For Cambridge IGCSE Biology 0610 (and 0970, which has the same content). **Supplement** is Extended content, only examined on Papers 2 and 4.

Name

Total / 22

- 1** Which row shows the elements present in a protein? [1 mark]
- A. ☐ carbon, hydrogen and oxygen only
- B. ☐ carbon, hydrogen, oxygen and nitrogen
- C. ☐ carbon, oxygen and nitrogen only
- D. ☐ hydrogen, oxygen and nitrogen only
- 2** Which molecules join together to make a fat? [1 mark]
- A. ☐ amino acids
- B. ☐ glucose molecules
- C. ☐ fatty acids and glycerol
- D. ☐ glycerol and glucose
- 3** (a) List the chemical elements found in carbohydrates. [1] (b) Starch, glycogen and cellulose are all large molecules made from the same smaller molecule. Name this smaller molecule. [1] (c) Name the element that is present in proteins but not in carbohydrates. [1] (d) Name the smaller molecules from which proteins are made. [1] [4 marks]

- 4** A student tests a sample of milk for different food molecules. (a) State the colour change that shows the presence of protein when biuret solution is added. [1] (b) Describe how the student should test the milk for reducing sugars. [3] (c) The milk gives a negative result in the iodine test. State what this shows. [1] **[5 marks]**

- 5** A student compares the vitamin C content of two fruit juices, P and Q. She adds each juice drop by drop to 2 cm³ of blue DCPIP solution and records how many drops are needed to make the DCPIP colourless. (a) State which juice contains more vitamin C and explain your answer. [2] (b) State two variables the student should keep the same. [2] **[4 marks]**

Results	
juice	number of drops to decolourise DCPIP
P	6
Q	15

- 6** Describe how to test a food for fats and oils using the ethanol emulsion test, and state the positive result. **[3 marks]**

7

Supplement

[4 marks]

(a) Describe the shape of a DNA molecule. [2] (b) A section of one strand of DNA has the base sequence A T C G. State the sequence of bases on the other strand next to it. [1] (c) State what holds the two strands of DNA together. [1]

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 (1)

2. [1]

C C (1)

3. [4]

- (a) carbon, hydrogen and oxygen (1) allow C, H, O; all three needed
- (b) glucose (1)
- (c) nitrogen (1) allow N; ignore sulfur / S
- (d) amino acids (1)

4. [5]

- (a) blue to purple / lilac / violet (1) reject 'pink'
- (b) add Benedict's solution (to the milk) (1)
- heat in a hot water bath / heat (1) allow 'warm' or 'boil'
- positive result is a colour change from blue to green / yellow / orange / brick-red (1)
- (c) starch is not present (1)

5. [4]

- (a) juice P (1)
- fewer drops were needed to decolourise the DCPIP (1) allow 'less juice needed'
- (b) any two from: volume of DCPIP (1)
- concentration of DCPIP (1)
- size of drops / same dropper or pipette (1)
- temperature (of the juices) (1) allow other sensible control variable
- Max 2 for (b)

6. [3]

- crush / mix the food with ethanol (and filter / allow to settle) (1)
- pour the ethanol solution into water (1)
- a cloudy white emulsion forms (1) allow 'milky'

7. [4] **Supplement**

- (a) two strands (1)
- coiled together / twisted to form a double helix (1)
- (b) T A G C (1) all four correct
- (c) bonds between pairs of bases (1) allow 'bonds between the bases'