

Biological catalysts, food tests and energy in food: practice questions

6 questions · 17 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 / 17

1 Which molecules are produced when enzymes break down proteins? [1 mark]

- A. ☐ Sugars
- B. ☐ Amino acids
- C. ☐ Fatty acids
- D. ☐ Glycerol

2 Enzymes are biological catalysts. (a) Explain what is meant by a biological catalyst. (2) (b) [3 marks]
Name the smaller molecules that enzymes join together to make a protein. (1)

3 **Triple only** [3 marks]

Describe the chemical tests you would use to show that a food contains protein and starch. Include the positive result for each test.

4

Triple only

[4 marks]

Describe how to test a food sample for (a) reducing sugars and (b) fats. Include the positive result for each test.

[illegible]

5

Triple only

[4 marks]

A student burned 0.8 g of a food to heat 25 g of water. The temperature of the water rose by 16 °C. Use the equation: energy released (J) = mass of water (g) × 4.2 × temperature change (°C) Calculate the energy released per gram of food.

Answer =

[illegible]

6

Triple only

[2 marks]

The energy per gram the student calculated was lower than the value printed on the food packet. Suggest two reasons for this.

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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 amino acids (1)

2. [3]

- (a) speeds up a reaction (1)
- without being used up / without being changed (1)
- (b) amino acids (1)

3. [3] Triple only

- protein: add biuret reagent / solution (1) allow add sodium hydroxide solution then copper sulfate solution
- positive result for protein: blue to purple / lilac (1)
- starch: add iodine solution, which turns from orange-brown to blue-black (1)

4. [4] Triple only

- (a) add Benedict's solution and heat in a hot water bath (1)
- colour changes from blue to green / yellow / orange / brick-red (1)
- (b) shake the sample with ethanol and then add / pour into water (1)
- cloudy white emulsion forms (1)

5. [4] Triple only

- $25 \times 4.2 \times 16$ (1)
- 1680 J (1)
- $1680 \div 0.8$ (1)
- 2100 J/g (1) correct answer with no working gains full marks

6. [2] Triple only

- heat / energy was lost to the surroundings / air (1)
- the food did not burn completely / incomplete combustion (1)
- some energy heated the boiling tube / not all the energy transferred to the water (1)
- Max 2