KS3 SCIENCE · BIOLOGY

Respiration: exam questions

Name _____
Total: 22 marks

1 Name the part of a cell where aerobic respiration happens. **[1 mark]**

2 Describe the difference between breathing and respiration. **[2 marks]**

3 Write the word equation for aerobic respiration. **[2 marks]**

4 Give two things that the body uses the energy from respiration for. **[2 marks]**

5 State when muscle cells respire anaerobically, and name the substance that is made. **[2 marks]**

6 A sprinter keeps breathing hard for several minutes after a race. Explain why. **[2 marks]**

7 Write the word equation for fermentation in yeast. **[2 marks]**

8 Give two uses of fermentation by yeast. **[2 marks]**

9 A baker mixes yeast into bread dough and leaves the dough in a warm place. Explain why the dough rises. **[2 marks]**

10 A student puts yeast and glucose solution into two flasks and stretches a balloon over the neck of each. One flask is kept at 10 °C and the other at 35 °C. After 20 minutes, the balloon on the warm flask is much bigger. Name the gas in the balloons and explain the result. **[2 marks]**

11 Compare aerobic respiration with anaerobic respiration in human muscles. Give one similarity and two differences. **[3 marks]**

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Respiration: mark scheme

Total: 22 marks

1 [1 mark]

- Mitochondria (accept: mitochondrion) **(1)**

2 [2 marks]

- Breathing is moving air into and out of the lungs **(1)**
- Respiration is a chemical reaction in cells that releases energy **(1)**

No mark for "makes energy".

3 [2 marks]

- Reactants: glucose + oxygen (in either order) **(1)**
- Products: carbon dioxide + water (in either order) **(1)**

Allow "(+ energy)" written after the products.

4 [2 marks]

- Any one from: movement (accept: making muscles contract), keeping warm, growth or repair (accept: building new molecules) **(1)**
- A second one from the same list (accept any other correct use) **(1)**

5 [2 marks]

- During hard exercise (accept: when they cannot get enough oxygen) **(1)**
- Lactic acid **(1)**

6 [2 marks]

- Lactic acid has built up in the muscles **(1)**
- Extra oxygen is needed to break it down (accept: to pay back the oxygen debt) **(1)**

7 [2 marks]

- Reactant: glucose **(1)**
- Products: ethanol + carbon dioxide (in either order) **(1)**

8 [2 marks]

- Making bread (accept: baking) **(1)**
- Brewing (accept: making beer or wine) **(1)**

9 [2 marks]

- The yeast respires (accept: ferments the sugar) and makes carbon dioxide **(1)**
- The gas is trapped as bubbles, which make the dough swell **(1)**

10 [2 marks]

- Carbon dioxide **(1)**
- The warm yeast ferments (accept: respires) faster, so it makes the gas faster **(1)**

11 [3 marks]

- Similarity: both use glucose, or both release energy **(1)**
- Difference: aerobic respiration uses oxygen and anaerobic respiration does not **(1)**
- Difference: aerobic respiration releases more energy, or aerobic respiration makes carbon dioxide and water and anaerobic respiration makes lactic acid **(1)**