

Model Answers: Medium

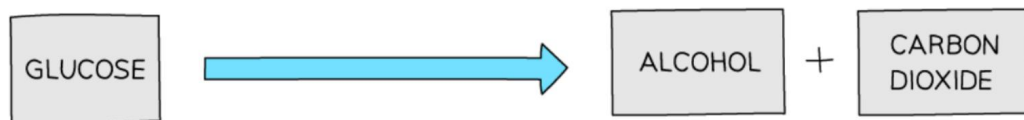
Q1

The correct answer is **B** because:

The word equation for anaerobic respiration in animals is:



The word equation for anaerobic respiration in yeast is:



Q2

The correct answer is **D** because:

- The purpose of any form of respiration is to release energy stored in the chemical bonds of molecules like glucose, so all types of respiration release energy.
- The overall equation for aerobic respiration is (energy released is not shown):



Lactic acid is not produced as a waste product in aerobic respiration, but in anaerobic respiration (animals only).

Q3

The correct answer is **A** because:

- Plants, like all living organisms respire to release energy (not shown in the above equations), therefore the process of aerobic respiration is the same in plants as it is in other organisms.
- Plants also photosynthesise, but only when conditions allow it to (such as when light is available and the temperature is appropriate).

B is incorrect as	this is the equation for photosynthesis in plants. Photosynthesis is not the reverse reaction of respiration, although the reactants and products are the opposite way around in each reaction).
C & D are incorrect as	the reactants and products have been mixed up.

Q4

The correct answer is **C** because:

- Lactic acid builds up in skeletal muscle cells during vigorous exercise
- It is mainly excreted into the blood, and when the blood passes through the liver lactic acid is taken up by liver cells where it reacts with oxygen, forming carbon dioxide and water (and releasing energy).
- As lactic acid is therefore being broken down with oxygen (and energy is being released), this is an example of aerobic respiration.

A is incorrect as	the kidneys can also breakdown lactic acid (using oxygen to form carbon dioxide and water) but they do not excrete lactic acid.
B is incorrect as	anaerobic respiration in the muscles produces lactic acid.
D is incorrect as	lactic acid is not excreted by the lungs (the carbon dioxide produced in aerobic respiration is).

Q5

The correct answer is **B** because lactic acid is produced from the incomplete breakdown of glucose in anaerobic respiration. When lactic acid is oxidised (reacted with oxygen) the remaining energy is released.

Remember ethanol (an alcohol) is produced as a waste product of anaerobic respiration in yeast cells, and neither gas (carbon dioxide or oxygen) is involved as a reactant or product in anaerobic respiration.

Q6

The correct answer is **C** because:

- The leaf will **not photosynthesise** as there is a black cover around the tube, meaning no light can get in.
- The leaf will **respire** as all living cells must respire to release energy.
- Available oxygen in the tube will be absorbed by the plant for aerobic respiration and the waste gas carbon dioxide will be produced. This is absorbed by the substance at the bottom of the tube.
- The ink drop in the tube will move to the right as the air pressure in the test tube will decrease as the number of gas molecules decreases (because any carbon dioxide is absorbed)

When answering a question like this, it is important to consider all the information in the diagram before making your choice of answer.

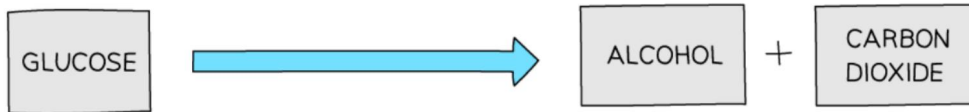
Q7

The correct answer is **A** because increasing the temperature of an enzyme to its optimum increases the rate of a chemical reaction it catalyses as enzymes and substrates will have more kinetic energy and therefore will collide successfully more often.

B is incorrect as	the graph shows the rate of the enzyme's activity increasing up to 40°C, so the bonds holding the structure together cannot have been altered.
C is incorrect as	the optimum for the enzyme is somewhere between 30°C and 50°C.
D is incorrect as	enzymes are denatured at temperatures above their optimum, not at low temperatures.

Q8

The correct answer is **B** because the yeast cells would largely be respiring anaerobically after oxygen in the flask was used up. The reaction for this is:



<p>A, C & D are incorrect as</p>	<p>oxygen is never a gas evolved in a respiration reaction. Lactic acid is only produced in animal cells when oxygen is not available.</p>
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Q9

The correct answer is **C** respiration because:

- Enzymes are proteins that act as biological catalysts, speeding up reaction times.
- All cellular reactions in living cells are catalyzed by enzymes.
- Osmosis is not a reaction, it is the diffusion of water from high to lower water potential through a partially permeable membrane, and therefore it does not require the action of an enzyme to occur.

Q10

The correct answer is **B** because as the yeast respire anaerobically, it produces carbon dioxide gas which would be released into the tube, increasing the pressure inside the tube and pushing the drop of coloured liquid to the left.

