

12. Respiration

12.2 Aerobic respiration

Paper 3 and 4

Marking Scheme

Q1.

(c)(i)	glucose ; oxygen ;	2	R each additional circle
(c)(ii)	mitochondria / mitochondrion ;	1	
(c)(iii)	(cell) membrane ;	1	

Q2.

(b)	glucose + oxygen ; → carbon dioxide + water ;	2	
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Q3.

(a)(i)	<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;">Aerobic respiration</div> <div style="display: flex; flex-direction: column; gap: 10px;"> <div style="border: 1px solid black; padding: 5px;">involves enzymes. ;</div> <div style="border: 1px solid black; padding: 5px;">only occurs in animals</div> <div style="border: 1px solid black; padding: 5px;">produces carbon dioxide and water. ;</div> <div style="border: 1px solid black; padding: 5px;">produces lactic acid.</div> <div style="border: 1px solid black; padding: 5px;">requires chlorophyll.</div> <div style="border: 1px solid black; padding: 5px;">uses glucose and oxygen. ;</div> </div> </div>	3	one mark for each correct line R each additional line
(a)(ii)	more ;	1	
(a)(iii)	anaerobic / fermentation ; produces, alcohol / ethanol ; produces carbon dioxide ; <i>used in:</i> bread-making ; brewing / named product of brewing ; (bio)fuels ; disinfectants / AW ; AVP ;	3	

Q4.

(c)	oxygen ;	1	
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Q5.

(a)	<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;">Aerobic respiration</div> <div style="display: flex; flex-direction: column; gap: 10px;"> <div style="border: 1px solid black; padding: 5px; width: 150px;">involves the action of enzymes.</div> <div style="border: 1px solid black; padding: 5px; width: 150px;">occurs in animals only.</div> <div style="border: 1px solid black; padding: 5px; width: 150px;">produces water.</div> <div style="border: 1px solid black; padding: 5px; width: 150px;">requires carbon dioxide</div> <div style="border: 1px solid black; padding: 5px; width: 150px;">releases less energy than anaerobic respiration.</div> <div style="border: 1px solid black; padding: 5px; width: 150px;">requires oxygen.</div> </div> </div>	3	one mark for each correct line R each additional line
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Q6.

(d)	cells ; oxygen ; nutrient ;	3	
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Q7.

(a)	(reactants) glucose + oxygen ; (products) carbon dioxide + water ;	2	
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Q8.

(a)(i)	Fungus / Fungi ;	1	
(a)(ii)	<u>aerobic respiration</u> ;	1	

Q9.

(a)	$C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$ (+ energy released) ;;	2	one mark for correct symbols one mark for correct balancing
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Q10.

(b)	$\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}$ (+ energy released) ;;	2	one mark for correct symbols one mark for correct balancing
(c)(i)	volume ; distance / length ; control / maintain / regulate / stabilise / keep / constant / sustain ;	3	
(c)(ii)	carbon dioxide will affect, results / volume of gas (in respirometer) / carbon dioxide could kill the larvae ;	1	A to measure (changes in) oxygen only