

AQA, OCR, Edexcel

A Level

A Level Biology

Gas Exchange in Organisms

Answers

Name:

M

M

E

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Total Marks: /29

Answer	Marks
<p>1. a)</p> <p>i) – Large surface area - Efficient ventilation. - short diffusion pathway</p> <p>ii) –Constant ventilation to replace O₂ and remove CO₂ - Rapid blood flow to transport O₂ away from the lungs and CO₂ towards the lungs.</p> <p>iii) Directly across the body surface</p> <p>iv) They are too large (Small SA:V ratio), diffusion pathway too long, rate of diffusion too slow.</p>	<p>2 marks</p> <p>2 marks</p> <p>1 mark</p> <p>2 marks</p>
<p>2. a)</p> <p>i) Network of air filled pipes</p> <p>ii) – Air moves into the tracheae through the open spiracles -O₂ moves down concentration gradient from the air to the cells -CO₂ moves down concentration gradient from the cells to the spiracles and then out into the atmosphere -The tracheae branch off into tracheoles which have permeable walls</p> <p>b)</p> <p>i) – In the leaf - adapted to have a large surface area</p> <p>c)</p> <p>i) – spiracle control gas exchange in insects - stomata and guard cells control gas exchange in plants –If the spiracles/stomata are left open all the time then water will leave the insect/plant via evaporation -This will cause the organism to dry out and die</p>	<p>1 mark</p> <p>4 marks</p> <p>2 marks</p> <p>4 marks</p>

<p>d)</p> <p>i) They live in areas that are very hot, dry or windy</p> <p>ii) – moisture is trapped around the stomata -reduces the concentration of the water so less is lost from the leaf/ reduces water potential gradient</p> <p>iii) <u>Any two from:</u> - sunken stomata - curled leaves - fewer stomata - waterproof/ waxy cuticles</p>	<p>1 mark</p> <p>2 marks</p> <p>2 marks</p>
<p>3. A)</p> <p>i) -Covered in lamella - Increase surface area</p> <p>ii) –Blood flows through the lamella in one direction - Water flows over in the opposite Direction</p> <p>iii) – Maintains a large concentration gradient between water and oxygen - maximum amount of oxygen moves from the water into the blood</p>	<p>2 marks</p> <p>2 marks</p> <p>2 marks</p>