

AQA, OCR, Edexcel

A Level

A Level Biology

Biological Membrane Answers

Name:

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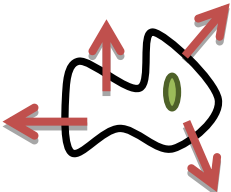
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Mathsmadeeasy.co.uk

Total Marks: /38

Answer	Marks
<p>1.</p> <p>a) i) – the net movement of particles - from an area of low concentration to an area of high concentration</p> <p>b) i) The steeper the concentration gradient the higher the rate of diffusion.</p> <p>ii) -Length of diffusion pathway/thickness of the membrane – shorter pathway = higher rate of diffusion -Surface area – the larger the surface area the faster the rate of diffusion</p>	<p>2 marks</p> <p>1 mark</p> <p>4 marks</p>
<p>2.</p> <p>a) i) – Short diffusion pathway – each alveolus is surrounded by a dense capillary network. -Steep concentration gradient – dense capillary network means that blood is rapidly transported away, maintaining the concentration gradient. - Large surface area – alveolar walls provide a large SA/ large SA: Volume ratio.</p> <p>ii) – Destroyed elastin reduces the surface area of the alveoli -Destroyed elastin reduces efficiency of ventilation (higher residual volume in lungs) - gas exchange is less efficient - Less oxygen is transported into the blood and to the respiring tissues. -Increased breathing rate is required to provide sufficient oxygen.</p>	<p>3 marks</p> <p>4 marks</p>

<p>3.</p> <p>a)</p> <p>i) The tendency of water to move from one area to another via osmosis.</p> <p>ii)</p>  <p>- Drawing must show a shrunken cell</p> <p>iii)- High water potential outside the cell so water moves into the cell</p> <p>- Cell becomes turgid but doesn't burst because of the cell wall</p> <p>b)</p> <p>i) Facilitated diffusion</p> <p>ii) The water potential inside the cell increases</p> <p>iii) – Cl⁻ ions cannot be transported out of the cell as efficiently because of the faulty CFTR protein</p> <p>- Water potential remains high in cell.</p> <p>-Therefore water does not leave the cell by osmosis.</p> <p>- The mucus becomes thicker and stickier.</p>	<p>1 mark</p> <p>2 marks</p> <p>2 mark</p> <p>1 mark</p> <p>1 mark</p> <p>4 marks</p>
<p>4.</p> <p>a)</p> <p>i) Charged molecules</p> <p>ii) -Passive process</p> <p>- particles move down the concentration gradient</p> <p>b)</p> <p>i) -The K⁺ ion attaches to the receptor site on the external side of the membrane protein</p> <p>-This causes the membrane protein to change shape</p> <p>-The K⁺ ion is then released on the opposite side of the membrane into</p>	<p>1 mark</p> <p>2 marks</p> <p>3 marks</p>

<p>the cell.</p> <p>c)</p> <p>i) Movement of molecules against their concentration gradient using ATP.</p> <p>ii) – A glucose molecule and calcium molecule are bound to the co-transporter at the of same time on the external side of the cell -The concentration gradient of the calcium is used to move the glucose against its concentration gradient into the cell.</p> <p>d)</p> <p>i) -The cell uses its membrane to surround the protein -The membrane then pinches off to form a vesicle with the protein inside. -The protein is now inside the cell.</p>	<p>1 mark</p> <p>3 marks</p> <p>3 marks</p>
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