

Question		Answer	Marks	Guidance									
20	(a) (i)	two of ACTH cortisol adrenaline	1	Two answers required for 1 mark.									
	(ii)	<table border="1"> <tbody> <tr> <td><i>Sino-atrial node</i></td> <td>increases rate of firing impulses</td> <td>increased heart rate circulates blood more quickly</td> </tr> <tr> <td><i>Liver cell</i></td> <td>increases glycogenolysis</td> <td>makes more glucose available for respiration</td> </tr> <tr> <td><i>Erector muscle in skin</i></td> <td>contraction of muscle</td> <td>(causes hairs to be raised and so) makes animal look larger / more aggressive</td> </tr> </tbody> </table>	<i>Sino-atrial node</i>	increases rate of firing impulses	increased heart rate circulates blood more quickly	<i>Liver cell</i>	increases glycogenolysis	makes more glucose available for respiration	<i>Erector muscle in skin</i>	contraction of muscle	(causes hairs to be raised and so) makes animal look larger / more aggressive	6	
<i>Sino-atrial node</i>	increases rate of firing impulses	increased heart rate circulates blood more quickly											
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<i>Erector muscle in skin</i>	contraction of muscle	(causes hairs to be raised and so) makes animal look larger / more aggressive											
	(iii)	catalyses synthesis of cyclic AMP from ATP cyclic AMP activates enzymes responsible for conversion of glycogen to glucose	2										

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	(iv)	<i>two from</i> prolonged high blood pressure can lead to cardiovascular problems prolonged high blood sugar can lead to, problems with blood sugar regulation / diabetes suppression of the immune system can lead to susceptibility to, disease / infection	2	
(b)	(i)	<b>D</b> pyruvate <b>E</b> lactate	2	
	(ii)	is a hydrogen acceptor / removed hydrogen from reduced NAD	1	
	(iii)	<i>two from</i> for glycolysis to take place, NAD / <b>G</b> , is needed there is a limited amount of NAD in the cell formation of, NAD / <b>G</b> , allows, glycolysis to continue / some ATP to be formed	2	
	(iv)	liver <b>and</b> in the blood	1	Both required for 1 mark.
(c)		<i>two from</i> cells are able to tolerate, high levels of lactate / acidity / low pH have high phosphocreatine stores use of stored ATP	2	
<b>Total</b>			<b>19</b>	