

Assessment Schedule – 2007

Human Biology: Describe maintenance of normal body functioning (90177)

Evidence Statement

Question	Evidence contributing to Achievement	Evidence contributing to Achievement with Merit	Evidence contributing to Achievement with Excellence
ONE (a)	To produce/release hormones (into the blood).		
(b)(i)	<i>Correctly describes location</i> eg at base of brain./below the hypothalamus.		
b(ii)	<i>Correctly names (abbreviates) a hormone</i> eg ONE of TSH, GH, FSH, ADH, LH or any other suitable hormone.		
b(iii)	<i>Describes a hormone function, eg ONE of:</i> <ul style="list-style-type: none"> • TSH acts on thyroid gland to produce another hormone (thyroxine) • GH affects growth (rate) • FSH (acts on ovary) to mature a follicle <p>OR</p> <ul style="list-style-type: none"> ovary releases oestrogen/testes releases testosterone • ADH acts on kidneys to control amount of water in body • LH helps ovulation to occur. • Or follow on from b(i) 		
(c)	<i>Describes ONE of:</i> <ul style="list-style-type: none"> • Increases BMR/basal metabolic rate/respiratory rate. \Rightarrow • Body produces more heat. \Rightarrow • Body/tissues/cells use more oxygen. \Rightarrow • Pituitary gland tells thyroid to reduce thyroxine production. \Rightarrow 	<i>Explanation is linked to the description, eg ONE of:</i> <ul style="list-style-type: none"> • Increased thyroxine detected by tissues/cells causes more oxygen to be taken up/used for respiration. • Increased thyroxine increases (tissue) metabolism/respiration so more heat is produced/released. • Tissues/cells detect increased thyroxine which speeds up rate of respiration. Oxygen is needed for respiration to occur. • Pituitary gland detects high blood thyroxine levels so decreases TSH production, which in turn decreases thyroxine production by thyroid gland. 	

<p>TWO (a)</p>	<p><i>Defines hypothermia, eg</i></p> <p>Decrease in core body temperature / core body temperature drops below 37°C/abnormally low body temperature / indicates severe temperature loss</p>		
<p>(b)(1)</p>	<p><i>Describes shivering as increasing energy release/respiration (rate)/ muscle contraction.</i></p> <p>NOT kinetic energy/friction.</p>	<p>Explanation links increasing energy release/respiration/ muscle contraction to the release of heat to warm the body/raise body temperature. Links heat to body temperature.</p>	
<p>(b)(2)</p>	<p><i>Describes constriction/contraction of (surface) blood vessels/capillaries.</i></p> <p>Heat energy directed to vital organs.</p>	<p>Explanation links contraction of blood vessels to the reduction of heat loss from the body (as less blood going to the skin)/send more blood to the core/torso to keep it warm.</p>	
<p>THREE (a)</p>	<p><i>Correctly gives TWO ways in which the body loses water eg:</i></p> <ul style="list-style-type: none"> • sweating • urination • breathing/exhaling/gas exchange • digestion/faeces. • Vomiting • tears 		
<p>(b)</p>	<p><i>Correctly describes TWO ways body maintains water balance, eg</i></p> <ul style="list-style-type: none"> • by drinking too much, more urine produced ⇒ <u>OR</u> <u>visa versa</u> too little water in body – less urine • by sweating too much, a thirst develops, the person drinks more fluid/water ⇒ • by exercising a lot, thirst develops, the person drinks more • by eating salty food, thirst develops, the person drinks more. • Less/more urine • Thirst response • Water release/retention • If blood is too dilute/too concentrated this indicates state of the blood. 	<p><i>Explains how the body helps to maintain water levels, eg</i></p> <ul style="list-style-type: none"> • kidneys need to filter out excess water to prevent blood (plasma) being incorrect/too dilute/too weak. More urine is produced. <p>or</p> <ul style="list-style-type: none"> • By sweating too much/by exercising a lot/by eating salty food the body's blood is too thick/too concentrated. The person gets the urge to drink more fluid to dilute the blood. <p>or</p> <p>A part of the brain (hypothalamus) detects the blood has too much water (dilute), another gland (pituitary), is given a signal to stop releasing ADH – the kidneys don't reabsorb as much water.</p> <p>or</p> <p>visa versa eg If a part of the brain detects blood is too thick (concentrated), another gland (pituitary) releases more ADH – the kidneys reabsorb more water to water down the blood.</p>	<p><i>Discusses at least TWO different ways the body helps to maintain water levels linked to the <u>state of the blood</u> and the <u>action of the pituitary gland</u>.</i></p> <p>Eg, by drinking too much, the <u>diluted blood</u> is detected by a part of the brain that signals the pituitary to stop releasing ADH – the kidneys don't reabsorb as much water. More urine is produced.</p> <p>AND</p> <p>An explanation of sweating too much OR exercising a lot OR eating salty food (as stated in merit)</p> <p>OR</p> <p>Eg by drinking too much, kidneys need to filter out excess water to prevent blood (plasma) being incorrect/too dilute/too weak. More urine is produced</p> <p>AND</p> <p>By sweating too much/by exercising a lot/by eating salty food the body's blood is too concentrated. A part of the brain signals the pituitary to release more ADH. The kidneys reabsorb more water to water down the blood, (urine production is less).</p>

<p>FOUR</p>	<p><i>Describes TWO factors, including ONE increase AND ONE decrease.</i></p> <p>Glucose increasing from eg:</p> <ul style="list-style-type: none"> • eating (high energy) food • conversion of glycogen to glucose. <p>Glucose decreasing from eg</p> <ul style="list-style-type: none"> • not eating food or eating low energy food • exercise/being active • being cold • increased respiration • Conversion of glucose to glycogen. • Insulin action in the liver, • High glucose...more insulin. 	<p><i>Explanation links the increase/ decrease of glucose in the blood to the hormone insulin</i></p> <p>or</p> <p>the conversion of glucose to glycogen to reduce glucose levels in the blood or vice versa.</p> <p>Note: a flow diagram may be used in the answer to help explanations.</p> <p>Flow diagram alone = A (as not an explanation). (Answer could extend into glucagon control as well as insulin.)</p> <p>If only mentions insulin increase and glucagon increase, maximum of M.</p>	<p><i>Discussion linking the insulin control of glucose to feedback mechanisms, eg:</i></p> <p>Increasing level of glucose in the blood stimulates the production of insulin by the pancreas. Insulin promotes the conversion of glucose to glycogen (in the liver). Glucose level falls in the blood which stops/inhibits the production of insulin. When glucose levels increase again (eg eating) insulin production is again stimulated. Needs BOTH increase and decrease AND conversion discussed.</p> <p>Must mention that the insulin production is stopped.</p>
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Judgement Statement

Achievement	Achievement with Merit	Achievement with Excellence
<p>SIX opportunities answered at Achievement level or higher.</p> <p>6 × A</p>	<p>SIX opportunities answered with THREE at Merit level or higher.</p> <p>3 × M + 3 × A</p>	<p>SIX opportunities answered with at least ONE at Excellence level and TWO at Merit level.</p> <p>1 × E + 2 × M + 3 × A</p>