

Assessment Schedule – 2010**Human Biology: Describe maintenance of normal body functioning (90177)****Evidence Statement**

Q	Achievement	Achievement with Merit	Achievement with Excellence
ONE	<i>Describes control of insulin in the body (TWO of):</i>	<i>Explains control of blood sugar by insulin in the body (ONE of):</i>	<i>Discusses (accurately) the control of blood sugar by feedback by the pancreas, keeping it within a tolerable range.</i>
	<ul style="list-style-type: none"> • Endocrine system is a system of glands that produce hormones. • Insulin reduces the level of blood glucose/ sugar OR converts glucose to glycogen • The changing levels of blood sugar cause the pancreas to produce/ stop producing insulin. 	<ul style="list-style-type: none"> • As blood sugar/ glucose increases insulin causes glucose to be converted to glycogen by liver/ stored in muscles. • High blood sugar signals the pancreas to produce insulin. Low blood sugar causes the pancreas to stop producing insulin. Therefore, blood sugar/ glucose levels are kept constant. <p>Information from appropriately labeled and accurate diagram is accepted.</p>	<ul style="list-style-type: none"> • As blood sugar increases, the pancreas produces insulin, which causes glucose to be converted to glycogen for storage. <p>Low blood sugar causes the pancreas to stop producing insulin.</p> <p>Therefore, blood levels are kept constant / within a narrow range.</p> <p>Information from appropriately labeled and accurate diagram is accepted.</p> <p><i>Uses biological language, without major inaccuracies:</i> <i>Not: "...tells the pancreas..."</i> <i>Not: "hypothalamus / pituitary detects"</i></p>

<p>TWO</p>	<p><i>Describes effects of smoking on the body (FOUR of) e.g.:</i></p>	<p><i>Explains the link between the long term effects of smoking (from (b)) and compromised body functioning (TWO OF) eg:</i></p>	<p><i>Discussion thoroughly links long term smoking effects (from (b)) and compromised body functioning using knowledge of the body functions involved (TWO OF) eg:</i></p>
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	<p>Up to TWO short term:</p> <ul style="list-style-type: none"> • capillaries constrict • increased blood pressure/ hypertension • heart rate / pulse increases • breathlessness • increased mucus production in air passages • cilia in air passages paralysed • coughing (not smokers cough) • Decreased taste / smell • Decreased immune system • Other physiological effects, e.g. dopamine released <p><i>Not: Kills cilia, dehydration</i> <i>Not: psychological effects, e.g. relaxed feeling</i></p> <p>Up to TWO long term:</p> <ul style="list-style-type: none"> • hypertension/ high blood pressure • heart damage/ coronary heart disease (CHD) • loss of elasticity of alveoli • cilia and mucus surfaces destroyed/ lost • increased risk of cancer(s) [lungs, throat, oesophagus] • destroy lung tissue • develop chronic bronchitis. • Decreased immune system <p><i>Not just e.g. “damaged lungs” – unless specific e.g. “damaged alveoli”</i> <i>Not just “cancer”</i></p> <p>Reason for or follow on from long term effects:</p> <ul style="list-style-type: none"> • Heart damaged so impaired circulation. • Alveoli damage causes breathlessness/ emphysema/ loss of fitness. • Cilia damage causes smokers cough. • Lung cancer affects gas exchange. 	<p>For example:</p> <ul style="list-style-type: none"> • As blood pressure increase, the heart is put under strain causing possible heart attacks. • Damage to the heart reduces the circulation, meaning that extremities do not get enough blood flow • Damage to cilia means that mucous cannot be cleared, resulting in a “smokers cough” • Cancer in the lungs reduces the surface area for gas exchange, resulting in loss fitness 	<ul style="list-style-type: none"> • Blood vessels constrict, narrowing their lumen and causing an increase in blood pressure. This puts stress on the heart, leading to damage/ CHD/ possible heart attack and death. • Alveoli walls burst and alveoli collapse so no longer able to exchange gases. Reduced lung capacity with less O₂ getting into body, so causing breathlessness, reducing fitness/ emphysema results with greatly reduced energy levels, may lead to death. • Loss of cilia and mucus surface means that lungs cannot clean themselves. Fluid and debris accumulate in lungs and are only cleared by smoker’s cough. Can lead to chronic lung infections. • Tar is a carcinogen so promotes cancer. Therefore, increased risk of cancer of lungs and associated areas, especially throat and oesophagus as exposed directly to tar.
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THREE	<i>Describes core body temperature (THREE of):</i>	<i>Explains core body temperature (BOTH of):</i>	<i>Discussion links the mechanism and importance of core body temperature maintenance.</i>
	<ul style="list-style-type: none"> • Core body temperature is temperature of the internal / inner organs / torso / abdomen / body cells. <i>Not main organs, not inner organs</i> • Core temperature needs to be kept constant / 37°C for body processes / chemical reactions to take place efficiently (<i>not "normally"</i>) <p>Including ONE or TWO of eg:</p> <ul style="list-style-type: none"> • Sweat glands produce sweat to lower temperature. • Surface capillaries dilate lower the temperature. • Shivering contracts muscles to raise temperature. • Surface capillaries contract to raise the temperature. 	<ul style="list-style-type: none"> • Temperature needs to be kept at 37°C, because our body processes / chemical reactions work best at this temperature. When temperature is below 37°C, reactions are too slow / above 37°C proteins / enzymes denature. <i>Not just hyper- and hypothermia</i> <p>AND ONE of eg:</p> <ul style="list-style-type: none"> • Sweat from sweat glands takes heat from the skin as it evaporates and this lowers the body temperature. • Dilation of surface capillaries increases blood flow to the skin so more heat leaves the body lowering body temperature. • Contracting muscles in shivering use energy from respiration. Respiration releases heat so increasing body temperature. • Contraction of surface capillaries reduces blood flow to the skin so less heat leaves the body / heat directed to internal organs so increasing body temperature. • If the body temp falls, the hypothalamus signals the pituitary gland to produce TSH → thyroid gland increases thyroxine production → increases BMR. The rise in BMR produces heat, which restores the core body temp. 	<ul style="list-style-type: none"> • Temperature needs to be kept at 37°C, because our body processes / chemical reactions work best at this temperature. When temperature is below 37°C, reactions are too slow / above 37°C proteins / enzymes denature. <p>AND eg:</p> <ul style="list-style-type: none"> • To do this the body raises a low temperature by shivering. Rapid contraction of the muscles uses a lot of respiration and so releases heat. This raises the temperature. If too hot the body releases sweat from sweat glands. As the water evaporates from the skin, heat energy is lost, thus cooling the body. In this way the body can stay at its ideal temperature.

Judgement Statement

Achievement	Achievement with Merit	Achievement with Excellence
2 A	2 M	2 E + 1 A