

Assessment Schedule – 2012

Biology: Demonstrate understanding of biological ideas relating to a mammal as a consumer (90929)

Evidence Statement

ONE	N0	N1	N2	A3	A4	M5	M6	E7	E8	
	No response / no relevant evidence.	ONE idea given.	TWO ideas given.	THREE ideas given.	FOUR ideas given.	Explanation given of the differences in the digestive system of both dog and rabbit with respect to EITHER caecum OR large intestine. ONE structure explained in AN animal.	Explanation given of the differences in the digestive system of both dog and rabbit with respect to BOTH caecum AND large intestine. ONE structures explained in BOTH animal groups	Discussion links the structure and functions of either the caecum or large intestine to the digestive process in BOTH rabbit and dog. ONE structure discussed in AN animal groups	Discussion links the structure and function of BOTH the caecum AND large intestine to the digestive process in BOTH rabbit and dog. ONE structures discussed in BOTH animal groups	
	<ul style="list-style-type: none"> • The rabbit has an enlarged caecum. Accept longer • The rabbit has a longer large intestine. • The caecum of the rabbit contains bacteria. • The rabbit’s diet consists of a lot of cellulose. OR tough stringy plant material. • The dog has a small caecum. • The dog has a shorter large intestine. • The dog’s diet consists largely of meat. • Rabbits caecum has bacteria. • Large intestines are used for absorption. • NOT dogs caecum has not bacteria. 					<ul style="list-style-type: none"> • The rabbit has a longer intestine than a dog. This is because the digestion of plant food is more difficult, so it needs to be in the digestive system for a longer time. • Dogs have a shorter intestine as the meat they eat can more easily be digested therefore their digestive system is shorter. • The rabbit has a longer large intestine as it needs more time to absorb water / digested molecules into the blood. • The dog has a shorter large intestine because most of the digested molecules have already been absorbed in the small intestines. • Dogs have a small caecum, as they produce all of the enzymes that they need to digest their food. • Rabbits eat a lot of cellulose and they have an enlarged caecum containing bacteria, which help them break down the cellulose. 		<ul style="list-style-type: none"> • The rabbit has a longer intestine than a dog. This is because rabbits consume a lot of cellulose which is more difficult to digest, so it needs to be in the digestive system for a longer time. • Dogs have a shorter digestive system as they can more easily obtain energy from the food/ meat that they eat, as the protein is more easily digested in the stomach by enzymes before it gets to the large intestines • The rabbit has a longer large intestine as it needs more time to absorb water / digested molecules into the blood after they have been digested in the caecum. • The dog has a shorter large intestine because most of the digestion of meat / protein occurs in the stomach so most of the digested molecules have already been absorbed in the small intestines and only the remaining molecules and water need to be absorbed. • Rabbits eat a lot of cellulose and do not produce an enzyme to break this down. Instead they have an enlarged caecum containing bacteria, which produce an enzyme to break down the cellulose. 		

			<ul style="list-style-type: none">• Dogs do not need a large caecum as they are able to produce all the enzymes that they need to digest their food, such as pepsin and lipase. Dogs still have a caecum, however, it is very much diminished and does not contain bacteria needed for digestion.• NOT caecum produces enzymes, must be the bacteria which produce the enzymes to digest the cellulose.
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TWO	N0	N1	N2	A3	A4	M5	M6	E7	E8
	No response / no relevant evidence.	ONE idea given.	TWO ideas given.	THREE ideas given.	FOUR ideas given.	Gives reasons for how TWO parts or features of the system work together, to contribute to overall function of increased surface area for absorption of digested food.	Gives reasons for how THREE parts or features of the system work together, to contribute to overall function of increased surface area for absorption of digested food.	Provides links between the explanations of TWO parts of the villi and how they contribute to the overall function of increased surface area for absorption of digested food. Microvilli / villi and capillaries. OR microvilli / villi and lacteals.	Provides links between the explanations of THREE parts of the villi and how they contribute to the overall function of increased surface area for absorption of digested food. Microvilli / villi and capillaries. AND microvilli / villi and lacteals.
	<ul style="list-style-type: none"> • Villi increase the surface area of the small intestine. • Microvilli – folds on the villi further increased surface area. • Capillaries absorb amino acids and glucose and water. • Lacteals absorb fatty acids digested fats / lipids into the lymph system. • Villi / microvilli absorb digested food. • Capillaries absorb materials into blood stream. • Villi / microvilli are very thin for easy diffusion / absorption OR for quick diffusion. 					<ul style="list-style-type: none"> • The finger-like projection shape of the villi increases the surface area available for absorption of digested food. Inside the villi is the lymph capillary or lacteal which absorb fatty acids. • The finger-like projection shape of the villi increases the surface area available for absorption of digested food. Inside the villi is the capillary system which absorbs amino acids, glucose and water. • This shape allows maximum absorption to occur. The job of the lymph capillary is to absorb fatty acids from the small intestine, which have come from the digestion of fats / lipids. 		<ul style="list-style-type: none"> • Villi are finger-like projections which have an increased surface area contain a capillary network close to their surface so that there is a short diffusion distance / quick diffusion / easy absorption of amino acids, glucose and water into the blood. • Villi are finger-like projections which have an increased surface area contain a lacteal / lymph capillary down their centre. The job of the lymph capillary is to absorb fatty acids into the lymph system from the small intestine they are close to the surface of the villi so that there is a short diffusion distance / so absorption is quick. 	

THREE	N0	N1	N2	A3	A4	M5	M6	E7	E8
	No response / no relevant evidence	ONE idea given.	TWO ideas given.	THREE ideas given	FOUR ideas given	Explanation of how different pH levels (pH values stated or described as low, high, acidic, neutral, basic / alkaline) provide optimum conditions for enzyme activity, in ONE part of the digestive tract. An example of a named enzyme is given. Answer links the pH and the enzyme action. ONE place ONE enzyme explained	Explanation of how different pH levels (pH values stated or described as low, high, acidic, neutral, basic / alkaline) provide optimum conditions for enzyme activity, in TWO parts of the digestive tract. An example of a named enzyme is given for each. Answer links the pH and the enzyme actions. TWO places ONE enzyme explained	Digestion of food discussed as a process occurring in one part of the digestive system which requires a different pH level for the optimum efficiency. Enzymes and substrates are named. Answer discusses the effects of pH and enzyme action and the substrate / food being broken down. ONE places ONE enzyme discussed	Digestion of food discussed as an enzyme moves to two different parts of the digestive system. The effects of the different pH levels on the enzyme is discussed. Enzymes and substrates are named. A link must be made between the two parts of the digestive system, discussing the impact of the changing pH level on specific, named enzymes. Enzyme activity is be related to denaturing. TWO places ONE enzymes discussed
	<ul style="list-style-type: none"> An example of a pH in one part of the digestive system, eg the stomach has a low pH. Do not need to state specific pH can say the stomach is acidic. Link made between an enzyme and food it digests, eg pepsin is used to digest protein. Link between part of the digestive system and the food digested there, eg the stomach is where protein is digested. Link made between general enzyme function and pH, eg at low or high pH enzymes less / more active. 					<p>Eg:</p> <ul style="list-style-type: none"> Different enzymes work best at different pH levels. Pepsin digests protein in the stomach and works best at a low pH. Salivary amylase digests starch / carbohydrates in the mouth and works best in a neutral environment. Low pH in the stomach denatures salivary amylase. 		<ul style="list-style-type: none"> When the food enters the mouth, the conditions are neutral. This allows salivary amylase to work most efficiently, digesting starch and breaking it down into simpler sugars. However, if the enzymes conditions change the enzyme is denatured, the shape of the active site changes, so the enzyme can no longer function as efficiently and the reaction shows down. When the food enters the mouth, the conditions are neutral. This allows salivary amylase to work most efficiently, digesting starch, as the active site on the enzyme is the correct shape. However, when the food is swallowed and moves into the stomach, conditions are too acidic and are now not ideal for the amylase to work and the enzyme becomes denatured resulting in the active site changing shape. 	

Judgement Statement

	Not Achieved	Achievement	Achievement with Merit	Achievement with Excellence
Score range	0 – 6	7 – 13	14 – 18	19 – 24