

5.3.3 Biology Paper 3 (231/3)

1a)	i – Specimen F has thorns/spikes that prick herbivores/mammals; - Photograph E, the plant normally produces a (white) unpleasant/poisonous/harmful fluid/liquid/substance; - Photograph H, the plant has thorny leaves/produces an unpleasant/poisonous fluid; Has thick cuticle to reduce transpiration (3 marks) ii – Specimen F: Habitat- terrestrial habitat (with average/moderate rainfall/water); leaves fold to conserve water (during drought); (2 marks) Photograph E: Arid/semi-arid/desert habitat; thick/fleshy stem that stores water/fluid; leaves reduced in size/number/size; (2 marks) - Photograph H: Arid/semi-arid/desert habitat; plant leaves fleshy storing water; thick/has mucilage. (2marks)															
b)	(i) – Shiny/glossy leaf surface that reflects light, reducing water loss by transpiration; - Thick/waxy cuticle to reduce the rate of (cuticular) transpiration/dehydration/dessication; (2 marks) (ii) - Has long tap roots/deep-rooted to reach (more) water during the dry season/from deep-seated water table; - The plant sheds some leaves during dry season/drought to reduce the surface area exposed for transpiration; (2 marks)	(14 marks)														
a)	<table border="1"><thead><tr><th>Leaf</th><th>Steps followed</th></tr></thead><tbody><tr><td>E</td><td>1a, 2b, 4b;</td></tr><tr><td>F</td><td>1b,3b,5a/1a,2b,4a;</td></tr><tr><td>G</td><td>1a,2b,4a;</td></tr><tr><td>H</td><td>1b,3a;</td></tr><tr><td>J</td><td>1b,3b,5b;</td></tr><tr><td>K</td><td>1a,2a;</td></tr></tbody></table> (6 marks)	Leaf	Steps followed	E	1a, 2b, 4b;	F	1b,3b,5a/1a,2b,4a;	G	1a,2b,4a;	H	1b,3a;	J	1b,3b,5b;	K	1a,2a;	
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b i)	– Leaf tip/apex (rounded/pointed/absence of tip); – Leaf base (presence/absence of leaf petiole/leaf sheath); (2 marks)															
b ii)	– Leaf tip : pointed versus round; – Leaf base: with petiole versus with sheath; – Leaf type (simple/compound); – Leaf shape (narrow/broad); – Leaf thickness (fleshy/thin/thick); – Leaf texture (smooth/rough); (2 marks)															
(c)	Specimen F – plant is a tree; Photograph H – plant is a herb; (2 marks)	12 marks														

3 a	i) Specimen L - incisor (tooth); sharp/chisel/wedge-shaped; has one root; (2 marks) ii) Specimen M - molar (tooth); three roots/broad/ridged surface/with cusps/ridges; (2 marks) Or - Premolar (tooth); two roots/broad/ridged surface/with cusps; (any two correct)	
	ii) - Appropriate diagram - Any two Labels (2 marks) (3 marks) iii) Specimen L (incisor tooth) is used for gripping/cutting vegetation (against the rough pad on the upper jaw) while specimen M (molar tooth) is used for crushing/chewing vegetation/grass into smaller pieces before swallowing; -if obtained from a herbivore. (1 mark) Or Specimen L is used for holding prey/shearing meat from bones (against the other incisors on the upper jaw) while specimen M (molar tooth) is used for chewing/grinding/crushing bones/flesh; -if obtained from a carnivore; (either correct one)	
(b)	Photograph N -vegetation/grass/plant/plant material; Horny/hard pad on the upper jaw/no incisors on upper jaw (upon which vegetation is cut); Diastema/absence of canine (for the tongue to easily manipulate grass/vegetation); (2 marks) Photograph P -flesh/meat; Long/curved/large sharp pointed canine (for piercing the prey); (2 marks)	
(c)	i) Suture; (1 mark) ii) Bones of the skull interlock, making strong hard joints, hence the hardness in the skulls of animals (to protect the delicate brain); Are fixed/immovable, tightly holding bones in place/no lines of weaknesses, hence the hardness of the skull (to protect the delicate brain); (2 marks)	(14 marks)