

BIOLOGY BY2

Question		Marking details	Marks Available																				
1.	(a)	<table border="1"> <thead> <tr> <th>Kingdom</th> <th>Phylum</th> <th>Class</th> <th>Genus</th> </tr> </thead> <tbody> <tr> <td>Planta(e)/ plant(s);</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>Annelid(s)/ annelida</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Vertebrate/ vertebrata/ chordate/ chordata;</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>Insect/ insecta;</td> <td></td> </tr> </tbody> </table>	Kingdom	Phylum	Class	Genus	Planta(e)/ plant(s);					Annelid(s)/ annelida				Vertebrate/ vertebrata/ chordate/ chordata;					Insect/ insecta;		4
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(b)	(i)	A = Fungi; B = Protocist(a)/ protocists/ protists; NOT protozoa	2																				
	(ii)	A (reproduce by) spores/ hyphae/ mycelium/ chitin walls/ heterotrophic/ saprophytic/ eukaryotic; Accept description of saprophytic B membrane bound organelles present/ eukaryotic/ no tissue differentiation/ (mainly) single celled organisms/ unicellular;	2																				
Question 1 total			[8]																				

Question		Marking details	Marks Available
2.	(a)	loss of water <u>vapour/ evaporation</u> of water; from (surface of) leaf /through stomata; Accept lenticels	2
	(b)	(i) TWO precautions and TWO reasons <ul style="list-style-type: none"> • Shoot cut under water/inserted under water/flood inside of apparatus with water/ assemble under water; to prevent air entering/ bubbles; • Shoot with large number of leaves; to ensure measurable rate of transpiration; • Avoid wetting leaves/ ensure leaves are dry; blocks stomata/ reduces rate of transpiration; • Leave time for apparatus to settle down; allow plant to adapt to new conditions/ to equilibrate; • Seal joints with Vaseline/ ensure screw clip is closed; to prevent air entering apparatus/ prevent leakage; • Ensure bubble set at appropriate position/ right hand end; to enable a (suitable) reading to be taken; Reference to not allowing air bubbles to enter = 1 mark (if no precautions are given)	4 max
	(c)	(i) Sun(light);	1
		(ii) Molecules of water moving together/ water pulled up; Because of <u>cohesion</u> of <u>molecules</u> ; <u>adhesion</u> to (walls of) { <u>xylem</u> / hydrophilic lining/ vessel wall}; root pressure {forces/ pushes} water upwards; IGNORE capillarity	2 max
	(d)	(i) A= phloem; B= xylem;	2
		(ii) {Xylem/ vascular <u>tissue</u> } is at the centre/ xylem is star shaped/ central stele; NOT bundle No vascular <u>bundles</u> / peripheral vascular <u>bundles</u> in stem; Endodermis visible in root/ no pith;	2 max
Question 2 total			[13]

Question		Marking details	Marks Available	
3.	(a)	<p>Any 4 Intercostal muscles <u>contract and</u> ribs move <u>up and out</u>;</p> <p>Diaphragm (muscles) <u>contract and</u> diaphragm <u>flattens</u>;</p> <p>(Internal) volume of <u>thorax</u> increases; accept chest reject lungs</p> <p>Pressure in lungs/ thorax decreases;</p> <p>{Higher/ <u>difference</u> in} air <u>pressure</u> outside {forces/ pushes/ moves/ drawn} air into lungs;</p>	4	
	(b)	(i)	<p>blood flows across (gills/ filaments/ lamellae/ gill plates) in opposite direction to water; water always has more oxygen than blood/ (oxygen) {diffusion/ concentration} gradient maintained; oxygen passes from water into blood; across entire {gill/ gas exchange} surface; NOT longer higher saturation of blood with oxygen/ more oxygen taken up;</p>	4
		(ii)	<p>Parallel (flow);</p>	1
		(iii)	<p>Equilibrium is reached (part way across the gill plates/ lamellae){diffusion/ concentration} gradient not maintained; {Lower percentage saturation with/ <u>only</u> 50% saturation} oxygen/ less oxygen uptake/ less diffusion of oxygen; NOT slower</p>	2
(c)	<p>gills dry out; prevents oxygen from dissolving on surface of gills;</p> <p>gills may {stick together/not open as easily/ collapse}; decrease in surface area;</p> <p>(Explanation cannot be accepted alone)</p>	2 max		
		Question 3 Total	[13]	

Question		Marking details	Marks Available
4.	(a)	(i) C/ D;	1
		(ii) K <u>and</u> F;	1
		(iii) C;	1
		(iv) E;	1
		(v) F;	1
		(vi) J;	1
	(b)	(i) Herbivorous/ herbivore;	1
		(ii) { <u>large/ridged/WM shape</u> } { <u>molars/premolars</u> } for <u>grinding</u> ; { <u>diastema/space with no teeth/ gap between teeth</u> } to assist with { <u>chewing/ (tongue to) manipulate food/ cud</u> }; { <u>well developed/ sharp/ long</u> } incisors for { <u>biting/ cutting/ slicing/ tearing</u> } (vegetation); loose articulation/ jaw moves in a { <u>horizontal/ circular</u> } plane; Very small/ no canines; open roots to allow continuous growth of molars;	3max
		(iii) Four <u>chambered</u> stomach (NOT four stomachs) / rumen/ large caecum; Contain cellulose digesting bacteria/ have cellulase producing bacteria; NOT cellulose eating bacteria Long gut {to allow extra time for digestion of cellulose/ cellulose harder to digest}; Cud is regurgitated for further chewing;	2
	Question 4 Total		[12]

Question		Marking details	Marks Available
5.	(a)	Parasites (are organisms that) live {on/ in} {another organism/ host} <u>and</u> obtain {nourishment/ nutrients} from it; at the expense of /causing harm to the host;	2
	(b)	attaches to gut wall by {hooks <u>and</u> suckers/ scolex}; <u>{large/ high/ increased} surface area to volume ratio</u> ; {digested products/ nutrients} in host gut absorbed into tapeworm; short diffusion pathway;	3 max
		Question 5 Total	[5]

Question			Marking details	Marks Available
6.	(a)	(i)	sucrose is produced in (photosynthesising) leaf/ leaves are the source of sucrose; sucrose travels in phloem; phloem removed (by the ringing process); sucrose cannot flow to roots/ is blocked;	3 max
		(ii)	amino acids/hormones/ florigen;	1
	(b)	sucrose used for {cell wall formation/ cell division/ mitosis/ respiration}; {Less/ no} sucrose used (by growing areas/sinks as they have been removed); therefore more will pass down stem; NOT accumulation	2 max	
	(c)	sucrose not replaced from above (the ring); so concentration decreases; as movement towards root continues; and sucrose used in respiration/storage/ converted to starch/ growth/ active transport;	3 max	
Question 6 Total				[9]

Question		Marking details	Marks Available
7.	(a)	<p>(i)</p> <p>Fish/ amphibians</p> <ul style="list-style-type: none"> A. Fish/ amphibians show external fertilisation; B. Fertilised {egg/ zygote/ embryo} develops outside body of parent; C. Many eggs/ young produced; D. Ensures some survive; <p>Reptiles/ birds mammals</p> <ul style="list-style-type: none"> E. Reptiles / Bird / Mammals internal fertilisation; F. This allows gametes to be independent of water; G. Increased chance of fertilisation/ fewer gametes {needed/ wasted}; <p>Reptiles/ birds</p> <ul style="list-style-type: none"> H. (Evolution of an) amniote egg; I. eggs surrounded by protective shell/ preventing dessication; <p>mammals</p> <ul style="list-style-type: none"> J. Birds incubate eggs outside mothers body; K. Mammals – development inside mothers body; L. Nutrients/ oxygen via placenta; M. Young born well developed; N. Birds/ mammals exhibit parental care; O. Relationship between parental care and number of offspring produced; <p>Question 7 Total</p>	[10]

Question	Marking details	Marks Available
(b)	<p>A. wall consists of three layers/ diagram of artery + vein labelled correctly;</p> <p>B. <u>smooth endothelial</u> (lining);</p> <p>C. to reduce friction;</p> <p>D. {outer layer/ tunica externa} of <u>collagen</u> (can be on diagram)</p> <p>E. to resist/prevent overstretching;</p> <p>F. artery has a thick wall to resist pressure;</p> <p>G. contain a <u>thick</u> layer of <u>elastic</u> tissue;</p> <p>H. { for <u>elastic recoil/ small lumen</u>} to maintain pressure;</p> <p>I. Smooth muscles in {small arteries/ arterioles} {regulate blood flow/pressure/ ref to vasoconstriction};</p> <p>J. arteries closer to the heart have more elastic tissue;</p> <p>K. semilunar valves in aorta/ pulmonary artery;</p> <p>L. Veins have valves to {<u>prevent backflow of blood/ to maintain unidirectional flow</u>};</p> <p>M. Walls are thin(ner) because blood at lower pressure;</p> <p>N. (skeletal) muscle contraction returns blood to heart;</p> <p>O. Large lumen reduces resistance to flow/ friction;</p> <p>Question 7 Total</p>	<p>[10]</p>