

GCE BIOLOGY BY2

Questions	Marking details	Marks Available
1.	Fungi; Animalia / animal; Protoctista; Accept Protists; Prokaryotae / Monera; NOT bacteria; Plantae/plant;	
Question total	5	

Questions	Marking details	Marks Available
2. (a) (i)	<p>A Alveoli/alveolar sacs; B Capillary (network); Both for 1 mark.</p>	1
(ii)	<p>C Pulmonary artery; D Pulmonary vein; Both for 1 mark.</p>	1
(b)	<p>Any 2</p> <p>Thin <u>alveolus</u> (walls) /one <u>cell</u> thick; NOT membrane or thin alone. Large surface area / highly folded; (volume – neutral) Large number of capillaries (or implied);</p>	2
(c)	<p>Contraction of <u>intercostal</u> muscles and diaphragm OR ribcage moves up and out and diaphragm flattens / contract; Increased volume and decreased pressure so air moves in(to lungs);</p>	2
Question total		6

Questions	Marking details	Marks Available
3.	<p>Parasites {<u>live in / on a</u>} host and obtain nourishment {at the expense of / do harm to} the host; NOT feed (can be neutral)</p> <p>Tapeworm / ticks / leeches / fleas / headlice / roundworm / plasmodium / malaria parasite / any parasite;</p>	2
	<p>Autotrophs use {(simple) inorganic molecules / carbon dioxide and water} to synthesise {(complex) organic compounds / named organic compound / sugars}; NOT food</p> <p>Plant / named Plant / Algae / Bacteria must be qualified by <u>chemosynthetic</u>;</p>	2
	<p>Saprobionts {secrete enzymes onto the food outside the body / feed by extracellular digestion} <u>and absorb</u> (or e.q.) the (soluble) products (by diffusion); NOT ingest</p> <p>Bacteria / Fungi / or named;</p>	2
Question total		6

Questions	Marking details	Marks
		Available
4. (a)	A <u>Right</u> atrio-ventricular / tricuspid.	1
	B <u>Left</u> AV valve / bicuspid / mitral	1
	Award one mark for identifying both Atrioventricular Valves but not right and left.	
	C Semi lunar valves.	1
(b)	Coronary; Supplies oxygen / blood to the heart <u>muscle / wall / tissue / cells</u> OR correct function for vein;	2
(c) (i)	Valve {exposed to / works at} a <u>higher</u> pressure (in left ventricle)/ {Right ventricle pumps blood at / valve A exposed to} <u>lower</u> pressures (to lungs);	1
(ii)	Blood leaks back (from ventricle) <u>to atrium</u> ;	1
(iii)	Breathlessness / fluid retention / fatigue / rapid or irregular heartbeat / blue lips / oedema / lower bp / faint / heart murmur;	1
Question total		8

Questions	Marking details	Marks Available
5. (a)	(Gill) lamellae / filaments / plates;	1
(b)	<p>Any 3</p> <p>Large surface area (for diffusion); (volume neutral)</p> <p>Thin / short diffusion pathway;</p> <p>Permeable;</p> <p>Good blood supply or implied; NOT transport system</p> <p>NOT moist.</p>	3
(c)	<p>Water is forced over the gill by {ventilation mechanisms / pressure differences / continuous swimming};</p> <p>Unidirectionally / one way flow;</p> <p>Countercurrent flow of blood and water / or description of;</p> <p>{Diffusion / concentration} gradient is maintained or description of;</p> <p>over the entire gill surface;</p> <p>High affinity Hb;</p>	4
Question total		8

Questions	Marking details	Marks
		Available
6. (a)	A Capillaries; NOT blood vessels;	1
	B Epithelium / epithelial cells; NOT endothelium;	1
	C Lacteal; NOT lymph;	1
(b)	D Arteriole;	1
	E Venule;	1
(c)	Microvilli:	1
	Increase SA for diffusion / uptake of molecule / digestion (of molecules);	1
	Mitochondria:	1
	(Synthesis of) <u>ATP for active transport</u> ;	1
(d)	Goblet cell / mucus secreting cell; NOT Brunner's gland.	1
	Secretes / makes mucus; Accept even if named incorrectly above.	1
Question total		11

Questions	Marking details	Marks Available
7. (a) (i)	<p>Any 3</p> <p>Has a reduced surface area / surface area:volume ratio;</p> <p><u>Thick cuticle</u>;</p> <p>Curled / rolled (downwards with the stomata inside);</p> <p>Hairs (to trap water vapour);</p>	3
	<p>(ii) Any scientifically correct explanation of their chosen feature /</p> <p>cuticle – comment on waterproofing /</p> <p>curled – trapping water /</p> <p>SA – less area over which water can be lost /</p> <p>stomata – trapping water vapour;</p>	1
(b)	Xerophyte;	1
(c) (i)	<p>Xylem;</p> <p>Transports water (and minerals);</p>	2
	<p>(ii) Phloem;</p> <p>Transports carbohydrates / sugars / products of photosynthesis /</p> <p>sucrose / amino acids;</p> <p>Not glucose/nutrients</p>	2
	(iii) Endodermis / starch sheath.	1
	<p>(iv) Decent diagram of endodermis cell;</p> <p>Endodermis – with Casparian strip/band clearly labelled;</p>	2

Questions	Marking details	Marks
		Available
(v)	<p data-bbox="392 327 472 356">Any 4</p> <p data-bbox="392 392 967 421"><u>Waterproof</u> / Casparian strip / band / suberin;</p> <p data-bbox="392 456 767 486">Blocks the apoplast pathway;</p> <p data-bbox="392 521 1134 618">Selective uptake / Active uptake / transport of minerals (by endodermis cells);</p> <p data-bbox="392 654 687 683">Into symplast pathway;</p> <p data-bbox="392 719 927 748">Active transport of minerals into pericycle;</p> <p data-bbox="392 784 727 813">Water follows by osmosis;</p> <p data-bbox="392 848 967 878">Water and minerals move into xylem vessels;</p>	4
Question Total		16

Question	Marking details	Marks Available
8. (a)	<p>A. Reference to Asexual and sexual;</p> <p>B. Asexual produces offspring that are genetically identical / clones;</p> <p>C. By mitosis;</p> <p>D. Allows (rapid) colonisation in favourable / stable conditions OR outcompetes (slower) sexual reproduction;</p> <p>E. But if conditions / or e.g. such as temp change / unstable or disease occurs;</p> <p>F. All individuals may die / none may have resistance / species may not be able to adapt;</p> <p>G. Sexual reproduction produces offspring that are genetically different;</p> <p>H. (Gametes) produced by meiosis;</p> <p>I. Genetic variability allows a species to adapt to environmental change /evolution;</p> <p>J. Slower/needs a partner (usually) / asexual faster;</p> <p style="text-align: right;">7 Max</p> <p>K. Relationship with animals / insects for pollination;</p> <p>L. Relationship with animals / insects for seed dispersal;</p> <p>M. Pollen can survive dessication / without water;</p> <p>N. Seed with stored food enables the embryo plant to grow until leaves form / are exposed to sunlight;</p> <p>O. Seed has a resistant (coat) to withstand adverse conditions;</p> <p style="text-align: right;">3 Max</p>	
Question total		10

Question	Marking details	Marks Available
8. (b)	<p>A. Transpiration is the loss/evaporation of water (vapour) from (inside) the leaves (and stem) of a plant;</p> <p>B. Through stomata;</p> <p>C. Down a water potential gradient;</p> <p>D. <u>High</u> TEMPERATURE increases (Rate of) Transpiration / ORA;</p> <p>E. Correct explanation of effect of temp / increased kinetic energy / rate of movement of water molecules;</p> <p>F. <u>Increased</u> AIR MOVEMENT / eq which increases (Rate of) Transpiration / ORA;</p> <p>G. Correct explanation of effect of wind / increasing diffusion gradient;</p> <p>H. <u>High</u> HUMIDITY which decreases (Rate of) Transpiration / ORA;</p> <p>I. Plus correct explanation / decreased diffusion gradient;</p> <p>J. <u>High</u> LIGHT INTENSITY which increases (Rate of) Transpiration / ORA;</p> <p>K. Because it causes stomatal opening;</p>	7 Max
	<p>L. Set up under water / with a continuous column of water / make sure air cannot get in / it is air tight / equilibration;</p> <p>M. Any description of how to change one factor / may be apparent on diagram;</p> <p>N. Volume of water / movement of bubble taken up per unit <u>time</u> is measured;</p> <p>O. To give a (close) approximation of transpiration rate;</p>	3 Max
Question Total 10		