2018 GCE O Level Biology Suggested Answer

1	2	3	4	5	6	7	8	9	10
А	А	В	В	С	D	С	А	В	А
11	12	13	14	15	16	17	18	19	20
С	В	С	D	А	В	С	С	В	D
21	22	23	24	25	26	27	28	29	30
В	D	А	D	С	С	D	В	В	А
31	32	33	34	35	36	37	38	39	40
С	D	А	С	D	А	С	В	D	D

Paper 1

Paper 2 (Section A)

1	(a)	(i)	State		6
			Chromosome	1	
		(ii)	State		
			Stage 3: Metaphase	1	
			Stage 4: Anaphase	1	
	(b)	(i)	State		
			Plant 2	1	
		(ii)	State		
			Plant 1: AA	1	
			Plant 3: aa	1	
2	(a)	(i)	State any 3 functions	3	10
			1. Liver converts excess glucose to glycogen when stimulated by insulin		
			2. Produce bile		
			3. Stores iron		
			4. Deaminates excess amino acids		
			5. Detoxification of harmful substances into harmless substances		

			6. Liver converts stored glycogen to glucose when stimulated by		
			glucagon		
		(ii)	State letter		
			С	1	
		(iii)	State		
			Name: Bile	1	
			Describe		
			Function: Emulsifies large fat droplets into smaller fat droplets to	1	
			increase surface area to volume ratio for faster rate digestion by		
			lipase.		
	(b)	(i)	State		
			40 °C	1	
		(ii)	Suggest	-	
			The enzyme, rennin, had denatured and therefore lost its 3D active site	1	
			so it could not bind to milk and cause it to clot.		
			Therefore it did not form lumps.		
	(c)	Sug	gest		
		Whe	n it forms lumps, the flow of milk through the alimentary canal is	1	
		slower and this increases the time			
		for complete digestion and maximum absorption of nutrients for the			
		developing young cow.			
		(1)	Chata		
3	(a)	(1)		4	5
		(::)		I	
		(11)		4	
			As temperature increases, the time taken for human blood to clot	1	
			decreases.		
			The graph observe that as to measure in success from 45% to 25% the		
			The graph shows that as temperature increases from 15 C to 35 C, the	4	
			time taken for numan blood to clot decreases from 24 minutes to 2.5		
			minutes.		

	(b)	State 2 functions		
		1. Seals the wound to prevent excessive bleeding/ excessive loss of blood.	1	
		2. It prevents foreign particles (bacteria and virus) from entering the		
		bloodstream and causing an infection.	1	
4	(a)	Describe adaptation	1	11
		1. The wall of the alveolus is one cell thick . This provides a shorter		
		diffusion distance for gases ensuring a faster rate of diffusion.	1	
		2. A thin film of moisture covers the inner surface of the alveolus and		
		allows oxygen to dissolve in it for efficient diffusion of oxygen across	1	
		alveolar wall.		
		3. The wall of the alveolus is supplied with a blood capillary that helps		
		maintain the concentration gradient of gases for efficient diffusion		
		with the continuous flow of blood.		
	(b)	Suggest effect		
		Carbon dioxide will not be fully removed from tissues and excreted from the	1	
		lungs during exhalation.		
		Explain effect		
		Carbonic anhydrase, an enzyme present in the red blood cell, catalyses a	1	
		reversible reaction in the formation of carbonic acid from carbon dioxide and		
		water.		
		Carbonic acid then dissociates into hydrogen ions and bicarbonate ions,	1	
		transported in blood to the lungs.		
		Hence, low levels of carbonic anhydrases indicates that less carbon dioxide		
		can be brought to lungs to be excreted.		
	(c)	(i) Describe		
		The pressure in the alveoli decreases from 0 to -1.0 in 1s and then	1	
		increases from -1.0 to 0 in another 1s during inhalation.	1	
	1			

		(ii)	Describe		
			The diaphragm muscles contracts and diaphragm flattens.	1	
			External intercoastal muscles contract while internal intercoastal muscles		
			relax.		
			Ribs move upwards and outwards. Sternum moves up and forward.	1	
			The volume of the thoracic cavity increases, the lung expands and	1	
			volume increases.		
5	(a)	(i)	173.5	1	6
		(ii)	Calculate		
			180-175.5= 4.5	1	
			4.5/180 x 100= 2.5%		
		(iii)	State		
			Urea	1	
	(b)	Des			
		Stru	1		
		and			
		men			
		Som	1		
		sele			
		The	remaining substances such as urea and excess water that are not	1	
		reat			
6	(a)	Des	cribe function		6
		A co	ntains the xylem and phloem.		
		The	1		
		leav			
		the p	1		
		the plant.			
	(b)	(i)	State		
			sucrose	1	
		(ii)	State		
			The phloem	1	

		(iii)	Calculate		
			65/2.5=26	2	
7	(a)	Exp	lain		6
		Proc	ess P, respiration, and process S, combustion, release carbon dioxide into	1	
		the e	environment ensuring that there is a continuous supply of carbon dioxide		
		for p	lants to carry out photosynthesis.		
		Proc	ess Q, photosynthesis, absorbs carbon dioxide from the environment to	1	
		synt			
		alive			
		In th			
		ensu			
		cons	stant.	1	
	(b)	Des	cribe role		
		Deco	1		
		brea	1		
		relea	ase carbon dioxide into the environment.	1	

Paper 2 (Section B)

8	(a)	(i)	Axes with units	1	11
			Scale	1	
			Plots	1	
			Smooth curve	1	
		(ii)	Calculate		
			100-15=85	1	
		(iii)	Describe relationship	1	
			As wavelength of light increases from 420nm to 500nm, the sensitivity of		
			the retina increases from 5au to 100au.	1	
			As wavelength of light increases beyond 500nm to 600nm, the sensitivity		
			of the retina decreases from 100au to 5au.		
		(iv)	76	1	

	(b)	Des	cribe		
		As li	ght intensity increases, the circular muscles of the iris contract and	1	
		the r	adial muscles of iris relax.	1	
		The	pupil becomes smaller or constricts	1	
		To re	educe the amount of light entering the eye.		
9	(a)	Con	pare		
		Any	3:		
		Osm	osis is the net movement of water molecules only while diffusion and	1	
		activ	e transport involves the net movement of other molecules and ions.		
		Osm	osis and diffusion involves movement down a water or concentration	1	
		grad	ient while active transport is against the concentration gradient.		
		Osm	1		
		diffu			
		Activ	1		
	(b)	(i)	Explain		
			Cell B		
			The sugar solution has a higher water potential than the cell sap of cell B.	1	
			Hence, water from the sugar solution entered the vacuole via osmosis		
			causing the cell to expand and the vacuole to increase in size.		
			Cell C		
			The sugar solution has a lower water potential than the cell sap of cell C.	1	
			Hence, water moves from the vacuole into the sugar solution via osmosis		
			causing the cell to shrink and vacuole to decrease in size.		
		(ii)	State		
			В	1	

		(iii)	Explain how its maintained		
			The root hair cells have many mitochondria to release energy for the	1	
			roots to take up ions via active transport.	1	
			Importance		
			The high ion concentration in the root hair cell helps to create the water	1	
			potential gradient necessary for water to enter the root hair cell via		
			osmosis.		
	Eithe	er			
10	(a)	Des	cribe process		10
		Pho	tosynthesis is the process by which light energy absorbed by chlorophyll	1	
		is tra	ansformed into chemical energy.	1	
		The	chemical energy is used to synthesise carbohydrates	1	
		from	the raw materials water and carbon dioxide.	1	
		Оху	gen is realeased during the process.	1	
		Che	mical/word equation	1	
	(b)	Ехр	lain		
		Pho	tosynthesis is an enzyme controlled reaction in the chloroplast and thus,	1	
		tem	perature will affect the rate of photosynthesis.	1	
		On a	a warm day, the temperature is higher and therefore enzymes and		
		subs	strates have more kinetic energy so more collisions occur and more	1	
		enzy	me substrate complexes are formed. Thus, rate of photosynthesis is		
		faste	er.		
		On a	a cold day, the temperature is lower and the enzymes have less kinetic	1	
		ene	rgy so less enzyme substrate complexes are formed and the rate of		
		phot	osynthesis is slower.		
		Thu	s, temperature is the limiting factor of photosynthesis on a cold day.	1	
	OR				

10	(a)	Describe fertilisation		10
		When the sperm reaches the egg in the oviduct, the sperm releases an	1	
		enzyme to break down part of the egg membrane.		
		During fertilisation, the nuclei of the sperm fuses with the nuclei of the egg to	1	
		form a zygote.		
		Outline early development of embryo		
		The cilia on the inner surface of the oviduct and the peristaltic movements of	1	
		the wall of the oviduct sweep the zygote to the uterus.		
		The zygote divides by mitosis to form an embryo as it travels from the oviduct	1	
		to the uterus.		
		It takes about <u>5 days for the embryo to reach the uterus</u> where it may <u>float</u>	1	
		around for 2 more days before implanting itself into the uterine lining.		
	(b)	Describe function		
		It allows oxygen and dissolved substances such as glucose and amino acids to	1	
		diffuse from the mother's blood to the fetal blood.		
		It allows metabolic waste products such as urea and carbon dioxide to diffuse	1	
		from the fetus blood into the mother's blood.		
		It allows protective antibodies to diffuse from mother's blood into the fetal blood	1	
		to protect the fetus against certain diseases.		
		It produces progesterone which maintains the uterine lining in a healthy state	1	
		during pregnancy.		