Transport in Animals

Mark Scheme 3

Level	IGCSE
Subject	Biology
Exam Board	CIE
Topic	Transport in Animals
Paper Type	(Extended) Theory Paper
Booklet	Mark Scheme 3

Time Allowed: **59 minutes**

Score: **/49**

Percentage: **/100**

1 **(a)**	*glucose* – **R** ; *oxygen* – **Q** ; *urea* – **P** ;	[3]	
(b)	amino acids used to make proteins ; deamination ; removal of, nitrogen-containing group / amino group / amine group / AW ; formation of urea ; rest of molecule / carbohydrate, is, respired / stored as glycogen / converted to fat / used for energy ;	[max 3]	**R** the liver produces amino acids
(c) (i)	(stimulates liver cells to) absorb more glucose ; **A** sugar store / convert, glucose ; to glycogen (for storage) ;	[max 2]	
(ii)	(stimulates liver cells to) breakdown glycogen ; to glucose ; release glucose ;	[max 2]	**A** convert to / AW
(iii)	fatty liver / build up of fat deposits ; hepatitis ; fibrous tissue ; cirrhosis ; liver cancer ; liver failure ;	[max 2]	
(d) **1** **2** **3** **4** **5** **6** **7**	bile contains bile salts ; emulsify (fats) / emulsification (of fats) ; break large globules of fat into smaller globules / AW ; mechanical / physical, digestion ; increases surface area ; for digestion by lipase ; (chemical) digestion of fat, takes longer / is harder ;	[max 4]	
		[Total: 16]	

Question		E Answers	Marks	Additional Guidance
2	(a	(has been through) <u>capillaries</u> (in organs/named organ(s)) ; (has been through) an organ / named organ (beforehand) ; lost oxygen to, (named respiring) tissues / (named) organs / cells / AW ;	2	
	(b)	oesophagus ; stomach ; gall bladder ; duodenum ; ileum ; pancreas ; colon / large intestine / rectum ;	4	***Accept*** small intestine as alternative to duodenum and ileum
	(c)	glucose, amino acids ; (named) vitamin(s) / (named) mineral(s) ; in solution / soluble / in the plasma ; transported from, small intestine / duodenum / ileum site of absorption ; to liver ;	max 3	
	(d)	*to max 4* (when a) high glucose concentration , glucose converted to <u>glycogen</u> ; low glucose concentration , <u>glycogen</u> converted to glucose ; ref to correct role of, insulin / glucagon ; makes plasma proteins ; excess amino acids , deaminated / described ; *to max 3* alcohol, broken down / respired / metabolised ; named toxin, broken down ; **R** toxin unqualified	max 5	

2	**(e)**		*phagocytes to max 3*		
		1	ingest / engulf , bacteria / pathogens / viruses **;** **R** 'eat'		
		2	digest / destroy (bacteria / pathogens / viruses) **;**		
		3	using enzymes **;**		
		4	any further detail **;**		
			lymphocytes to max 3		
		5	make / produce / secrete / release, antibodies **;**		
		6	*idea of* specificity / lymphocytes respond to particular pathogen *or* antigen **;**		
		7	effect of antibodies described**;**		
		8	AVP **;**	max 4	AVP for either cell type, could be additional point about antibodies
				[Total: 18]	

Question		E	Answers	Marks	Additional Guidance
3	(a)	**A** **B** **C** **D**	left atrium ; mitral / bicuspid / atrioventricular, valve ; semi-lunar valve / pocket valve / aortic valve ; right ventricle ;	[4]	*reject if correct and incorrect answers given for each* **A** atria **A** auricle **A** 'oracle' / 'oricle' **A** if given the plural **A** if given the plural, **A** 'half-moon' valve
	(b)	**E** **F**	(superior / anterior) vena cava ; aorta ;	[2]	
	(c)		coronary ;	[1]	**R** cardiac **A** phonetic spellings *ignore incorrect name for MP1–4*
		1	fatty deposit in (wall of) artery ;		**A** atheroma / plaque **A** cholesterol / LDL / fatty acids **A** arteriosclerosis / described
		2	blocks, artery / restricts, blood flow ;		**A** 'narrows' artery
		3	restricts, oxygen / nutrient, supply ;		**R** if 'to body' ***ignore*** high blood pressure
		4	blood clotting occurs ;	[max 2]	
	(d)	heart not pumping blood / keeps blood circulating ; blood is oxygenated ; carbon dioxide is removed from blood ;		[max 2]	**A** blood not pumped to the lungs **A** exchange of oxygen and carbon dioxide for two marks ***ignore*** 'to keep patient alive' / 'supply heart with blood'
	(e)	**1** **2** **3** **4** **5** **6** **7** **8** **9**	ref. to (cardiac) muscle ; ref. to myogenic / heart has own pacemaker ; septum (divides heart into two) ; two (separate) ventricles / AW ; ventricle(s), contract / pump ; increase blood pressure ; right ventricle has thin(er) wall / left ventricle has thick(er) wall ; so low(er) pressure / higher pressure ; (in context) to lungs / to rest of body ; (in context)	[max 4]	**R** 'push' **A** bigger , **R** tougher **A** muscle **A** 'to whole body' for LV if blood to lungs described
			[Total: 15]		