

Transport

Mark Scheme 1

Level	IGCSE(9-1)
Subject	Biology
Exam Board	Edexcel IGCSE
Module	Double Award (Paper 1B)
Topic	Structure and Functions in Living Organisms
Sub-Topic	Transport
Booklet	Mark Scheme 1

Time Allowed: 56 minutes

Score: /46

Percentage: /100

Grade Boundaries:

9	8	7	6	5	4	3	2	1
>90%	80%	70%	60%	50%	40%	30%	20%	10%

Question number	Answer	Notes	Marks
1 (a) (i)	artery / arteries / aorta;		1
	(ii) atrium / left or right atrium / left or right atria / left or right auricle;		1
	(iii) 1. fewer chambers / two chambers / one atrium / one ventricle / eq; 2. fewer valves / eq; 3. no separation of left and right sides / no septum / no left and right atria / no left and right ventricles; 4. chamber walls have similar size / eq; 5. fewer blood vessels / only two blood vessels / eq;	allow converse for <u>human</u> heart 3. ignore ref to circulation / blood flow	3

(b)	<ol style="list-style-type: none">1. less oxygen/deoxygenated in fish heart;2. more carbon dioxide in fish heart;3. oxygen used in respiration;4. carbon dioxide produced by respiration; ;5. blood oxygenated in human lungs;6. carbon dioxide removed in human lungs;	allow converse for blood in human heart	4
(c)	<ol style="list-style-type: none">1. single circulatory / no separate lung circulation / blood passes through heart once / blood in fish has to pass through two sets of capillaries / eq;2. fish are smaller / fish have smaller heart / fish heart has thinner walls;	allow converse for human	2

Total 11 marks

Question number	Answer	Notes	Marks												
2 (a)	1. narrower lumen / eq; 2. thicker wall; 3. more muscle / stronger muscle / eq; 4. more elastic; 5. no valves;	Ignore blood flow Allow converse	2												
(b)(i)	<table border="1"> <thead> <tr> <th>Name of blood vessel</th> <th>Letter</th> </tr> </thead> <tbody> <tr> <td>vena cava</td> <td>L or N</td> </tr> <tr> <td>aorta</td> <td>C;</td> </tr> <tr> <td>pulmonary vein</td> <td>B;</td> </tr> <tr> <td>hepatic artery</td> <td>D;</td> </tr> <tr> <td>renal vein</td> <td>I;</td> </tr> </tbody> </table>	Name of blood vessel	Letter	vena cava	L or N	aorta	C;	pulmonary vein	B;	hepatic artery	D;	renal vein	I;	Reject B and D and B or D	4
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(b)(ii)	<table border="1"> <thead> <tr> <th>Contents of blood vessel</th> <th>Letter of blood vessel</th> </tr> </thead> <tbody> <tr> <td>contains the most glucose after a meal</td> <td>J;</td> </tr> <tr> <td>contains the least urea</td> <td>I;</td> </tr> <tr> <td>contains the least oxygen</td> <td>M;</td> </tr> </tbody> </table>	Contents of blood vessel	Letter of blood vessel	contains the most glucose after a meal	J;	contains the least urea	I;	contains the least oxygen	M;		3				
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contains the most glucose after a meal	J;														
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Total 9 marks

Question number	Answer	Notes	Marks
3(a)	1. water; 2. minerals / ions / salts / named mineral ion / eq;	Ignore nutrients Allow 2 marks for 2 named minerals;	2
(b)	1. shape; Then max 4 from: 2. cell wall; 3. cell membrane; 4. cytoplasm; 5. nucleus; 6. vacuole;	Palisade cell labelled = max 4	5

Total 7 marks

Question number	Answer	Notes	Marks
4 (a) (i)	lung / lungs;		1
(ii)	1. gains oxygen / oxygenated /eq; 2. loss of carbon dioxide / eq;	Ignore refs to pressure / velocity Ignore colour change	2
(b)	prevent backflow / eq;		1
(c) (i)	0.3;		1
(ii)	3;		1
(iii)	75;; allow one mark for 0.8 / 24 / 2.4 in working		2
			Total 8 marks

Question number	Answer	Notes	Marks																					
5 (a)	<table border="1"> <thead> <tr> <th>Statement</th> <th>R blood cells</th> <th>White blood cells</th> </tr> </thead> <tbody> <tr> <td>transport oxygen</td> <td>✓</td> <td>✗</td> </tr> <tr> <td>contain a nucleus</td> <td>✗</td> <td>✓;</td> </tr> <tr> <td>produce antibodies</td> <td>✗</td> <td>✓;</td> </tr> <tr> <td>biconcave shape</td> <td>✓</td> <td>✗;</td> </tr> <tr> <td>ingest pathogens</td> <td>✗</td> <td>✓;</td> </tr> <tr> <td>numbers may increase following infection</td> <td>✗</td> <td>✓;</td> </tr> </tbody> </table>	Statement	R blood cells	White blood cells	transport oxygen	✓	✗	contain a nucleus	✗	✓;	produce antibodies	✗	✓;	biconcave shape	✓	✗;	ingest pathogens	✗	✓;	numbers may increase following infection	✗	✓;	<p>no mark if blank is left</p> <p>no marks for two crosses or two ticks in a row</p> <p>no mark for hybrid tick cross</p>	5
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(b)	<p>more oxygen; haemoglobin; muscles; respiration; (less) anaerobic respiration; (less) lactic acid / (less) oxygen debt / (less) fatigue / (less) cramp; more energy; run faster / run longer / run further / less tired / eq;</p>		4																					
Question number	Answer		Marks																					
5 (c)	<p>short race / quick race / short time / short distance / eq;</p> <p>oxygen not needed / no need to breathe / eq;</p> <p>anaerobic respiration;</p>		2																					
Total			11																					