

Transport

Mark Scheme 3

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 3

Time Allowed: 53 minutes

Score: /44

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)	thick(er) <u>wall</u> ; more elastic (tissue); more muscle (tissue); smaller lumen / hole / less space / less single layer of cells / eq; no valves;	ignore references to function ignore smaller diameter / less surface area unless qualified allow converse	Max 3
(b) (i)	less/no) muscle(s); <u>contraction</u> ; squeeze vein / push blood / eq;		Max 2
(ii)	red (blood cells) / erythrocytes;		1
(iii)	(less/no) oxygen / oxygenated blood; heart / brain / organ / body / cells / tissues / eq; <u>respiration</u> / <u>respire</u> / <u>respiring</u> ;	ignore gas exchange	2
		Total	

Question number	Answer	Notes	Marks
2 (a)	potometer;		1
(b)	transpiration / evaporation / diffusion;		1
(c)	1 cut under water; 2 water tight / air tight / seal / eq; 3 <u>how</u> bubble introduced; 4 dry leaves / eq; 5 measure distance bubble moves / length of bubble eq; 6 scale / ruler / cm / eq; 7 time / second / minute / hour / day; 8 repeat;		Max 4
(d) (i)	blows water away / removes water / eq; (maintains) diffusion <u>gradient</u> / conc. <u>gradient</u> / eq;	ignore guard cells	2
(ii)	stomata close / pores close;		1
(iii)	less surface / area; (fewer) idea of reduced number of stomata / pores;		2
(e)	fan / hairdryer / outdoors / put in a draught / put in open window / eq;		1
		Total	12

Question number	Answer			Notes	Marks												
3 (a)	<table border="1"> <thead> <tr> <th>Name of blood vessel</th> <th>Diameter of the lumen in mm</th> <th>Thickness of the wall in mm</th> </tr> </thead> <tbody> <tr> <td><u>vena cava</u>;</td> <td>30.0</td> <td>1.5</td> </tr> <tr> <td><u>capillary</u>;</td> <td>0.006</td> <td>0.001</td> </tr> <tr> <td><u>aorta</u>;</td> <td>25.0</td> <td>2.0</td> </tr> </tbody> </table>			Name of blood vessel	Diameter of the lumen in mm	Thickness of the wall in mm	<u>vena cava</u> ;	30.0	1.5	<u>capillary</u> ;	0.006	0.001	<u>aorta</u> ;	25.0	2.0	2 for all 3 correct 1 for 1 or 2 correct	2
Name of blood vessel	Diameter of the lumen in mm	Thickness of the wall in mm															
<u>vena cava</u> ;	30.0	1.5															
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<u>aorta</u> ;	25.0	2.0															
(b) i)	a rta;				1												
(ii)	<u>vena cava</u> ;				1												
(iii)	capillary; one cell thick / thin (wall/membrane) / short diffusion distance / low pressure / slow blood flow / eq;			ignore 0.001mm thick / small / ref to surface area to volume reject ref to thin <u>cell wall</u> wrong named blood vessel = 0 for whole item	2												

Question number	Answer	Notes	Marks
4 (a) (i)	trachea / wind pipe / cartilage; alveoli / alveolus / air sacs;	reject air pockets	2
(b) (i)	X – oxygen / O ₂ ; Y - carbon dioxide / CO ₂ ;		2
(ii)	8.4;		1
(iii)	B diffusion;		1
		Total	6

Question number	Answer	Notes	Marks
5 (a) (i)	250 000;		1
(ii)	32;; allow one mark for 80 000 in working		2
(b)	1. rare / random; 2. change / damage / eq; 3. DNA / gene / allele / genetic code / eq;	random change in cells =2	2
(c)	1. less surface area; 2. slower diffusion / less diffusion / less gas exchange; 3. less oxygen / less carbon dioxide;	ignore less room allow converse for X	2
(d)	1. blocked / narrowed / clogged / eq; 2. <u>coronary artery</u> ; 3. lot; 4. at / cholesterol; 5. less blood <u>to heart</u> ; 6. less oxygen / less oxygenated; 7. <u>muscle</u> (cells); 8. less respiration / anaerobic respiration; 9. lactic acid / angina; 10. heart attack / heart stops / cardiac arrest / eq;		5

(Total = 12 marks)