

B2.2. The Circulatory System ~ Answers

- 6 (a) (i) red blood cell (A) [1]
(ii) haemoglobin; no nucleus; biconcave/large surface area; (Any two) [2]
(b) any named food molecule, e.g. glucose/amino acids; urea; carbon dioxide; hormones; (Any two) [2]
(c) blood clotting; [1]

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- 12 (a) (i) A – red blood cell; (B) [1]
B – white blood cell; [1]
(ii) Transport oxygen; [1]
(iii) Biconcave (shape/disc);
Large surface area/faster gas exchange; [2]
(iv) Fibrinogen; (C)
changed to fibrin; [3]
(Fibrin) mesh traps red blood cells;
(b) (i) Iron; [1]
(ii) Less haemoglobin;
to carry oxygen;
for respiration; [3]
(c) (i) Platelets; [1]
(ii) Plasma; [1]
(iii) Group AB has smallest stock level;
but lasts the greatest number of days;
AB must be small proportion of population/rare blood group; [3]

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			AVAILABLE MARKS	
8	(a) (i)	Transport oxygen; [1]	[4]	
		Platelet; [1]		
		Plasma; [1]		
		Transport; [1]		
	(ii)	Any two from:	[2]	
		RBC – no nucleus, WBC – nucleus; [1]		
		RBC smaller, WBC larger; (comparison required) [1]		
		RBC is biconcave/WBC is not; [1]		
	(iii)	Any one from:	[1]	
		Haemoglobin;		
Biconcave disc/large surface area;				
(b)	Carries less oxygen; [1]	[2]		
	Reduced (cell) respiration ; [1]			
(c)	Any three from:	[3]		
	Only one RBC passes at a time/single file; [1]			
	Slow flow/movement [in capillary]; [1]			
	More time for exchange [of oxygen]; [1]			
	By diffusion; [1]			
			12	
2	(a) (i)	Artery;	[1]	
		(ii) Capillary;	[1]	
	(b)	Prevent backflow/maintain blood flow in one direction [/towards heart];	[1]	
	(c)	Withstand [high] pressure of blood;	[1]	
	(d)	Pulmonary (vein);	[1]	
4	(a)	25 (minutes);	[1]	
	(b) (i)	Colin;	[1]	
		(ii) Faster/shorter recovery time;	[2]	
	lower resting heart rate;			
	lower maximum heart rate/described/only reaches 90 bpm;			
	(Any two)		4	
5	(a)	Arrow drawn in A ↑;	[1]	
			[1]	
	(b)	B – Aorta;	[1]	
		C – Left ventricle;	[1]	
		D – Right atrium;	[1]	
(c)	Prevent backflow;	[1]		
	Into right atrium/maintain unidirectional flow of blood into ventricle/C;	[1]	6	

10 (a) Louise; [1]

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Any **two** pairs of points from:

- Lower heart rate at rest;
56 bpm;
- Slower/more time to reach maximum heart rate;
9 mins/3 to 12 mins/at 12 mins;

or

- Lower maximum heart rate;
132 beats per min;

or

- Faster return to resting/starting rate;
4 min/14 to 18 min/at 18 min; [4]

[5]

(b) Strengthened heart muscle/increased cardiac output;

[1]

(c) (i) Coronary artery;

[1]

(ii) Ventricle;

[1]

(iii) Clot/build up of fat/cholesterol;

[1]

(iv) No blood flow; [1]

No oxygen/sugar to cells; [1]

Cells cannot respire/release energy; [1]

[3]

AVAILABLE
MARKS

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