Transport in Man Remedial ANS

EOY Topical Revision

MCQ Answers

MCQ Answer

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13
A	B	D	B	B	B	C	B	C	C	A	B	A

Structured Questions Answers

14	(a)	**A** *Heart* **B** *Arteries* **C** *Capillaries* **D** *Veins*	[2]
	(b)	• **The spikes in the fluctuations are caused by ventricle contraction (systole) which results in pumping of new volume of blood into the arteries at high pressure;** • **The troughs in the fluctuations are caused by ventricle relaxing (diastole) to fill up with blood. Artery walls experiences relatively lower pressures at these intervals. But elastic recoil prevents a major drop in the pressure.** *[1 mark awarded for the ability to relate contraction with the spike & relaxation with the rough; 2nd mark went to ventricle]*	[2]
	(c)	• **The blood in the pulmonary artery moves through a shorter distance from the heart to the lungs compared to from the heart to the rest of the body through the aorta;** • **thus the right side of the heart does not need to pump blood as hard to the lungs as compared to the rest of the body.**	[2]
	(d)	**Narrower graph; higher maximum blood pressure reached.**	[2]

		The low (diastolic) pressure of the new graph should be below the systolic pressure of the previous graph. [1] *The frequency should be 10 or more.[1]*	
	(e)	Higher blood pressure --> higher blood velocity --> delivers blood faster to skeletal muscles; Blood rich in oxygen and nutrients for cell respiration	[2]
		[Total: 10 marks]	

15	**(a)**	**From the graph, length of 1 cycle (from start of first ventricular systole to start of the second) = 32 units/40 units = 0.8 seconds (must state what these numbers represent);** **Pulse rate = 60 / 0.8 (must show working with calculation;** **= <u>75 beats / min</u>; OR** **From the graph, beats per second = 40 units / 32 units = 1.25 (must state what these numbers represent)** **Pulse rate = beats per minute = 60 x 1.25 (must show working with calculation);** **= <u>75 beats / min</u>;**		[2]
	(b)	o **During <u>ventricular systole</u>;** o **the <u>tricuspid and bicuspid valves close</u> to prevent backflow of blood into the atria;** o **The <u>recoil of blood against these closed valves</u> produces the louder 'lub' sound;** o **During ventricular diastole, the <u>aortic and pulmonary valves close</u> to prevent backflow of blood into the ventricles;** o **The <u>recoil of blood against these closed valves</u> produces the softer 'dub' sound;**		[4]
	(c)	**To empty blood into the <u>ventricles</u>**		[1]
	((d)	**(i)**	**Pulmonary and systemic circulation (spelling must be correct)**	[1]
		(ii)	**1. A double circulatory system allows for <u>blood to flow slower</u> (under lower pressure) in the pulmonary circulation to**	[2]

			the <u>lungs to enable more time for gaseous exchange via diffusion</u>; OR **2. A double circulatory system allows a <u>higher speed of blood flow</u> (under higher pressure) in the systemic circulation to <u>all body tissues</u> to <u>supply nutrients and oxygen</u> quickly; OR** **3. Pulmonary circulation <u>does not need high pressure</u> of blood flow as the lungs are at <u>close proximity to the heart</u> / to <u>prevent damage</u> to the delicate <u>alveolar tissue/ epithelium</u>;**	
		[Total: 10 marks]		

Remedial worksheet (higher difficulty)

MCQ Answers

Q1	**Q2**	**Q3**	**Q4**	**Q5**
B	**C**	**B**	**B**	**A**

Structured Questions Answers

6	**(a)**	A: arteriole/artery B: blood capillary C: venule/vein [3 correct – 2m, 2 correct – 1 m]	[2]
	(b)	Arrow points upwards (blood flows from B to C)	
	(c)	Wall of A has a thicker layer of muscle and elastic fibre than C; C has valves but not A; Blood pressure in A higher so it has thicker wall to withstand the pressure; Blood pressure in C is low so blood tend to flow backwards, thus valves are needed to prevent backflow;	[4]
	(d)	Deposits of fatty substances result in narrowing of the vessel/smaller lumen; Blood clot causes blockage/increased blood pressure can cause blood vessel to rupture;	[3]

		Blood supply to heart muscle is disrupted; Cardiac muscles fail to contract due to lack of oxygen and glucose;	
		[Total: 10 marks]	

7	**(a)**		***Red blood cell***	***Cheek epithelial cell***	[2]
			Does not have nucleus	*Has nucleus*	
			Has haemoglobin	*Does not have haemoglobin*	
			biconcave disc-shape	*Irregular shape*	
			Can change shape/ flexible /can be bell-shaped	*Not flexible / inflexible*	
			Transports oxygen	*Does not transport oxygen but forms the outermost layer of cells of the mouth*	
			Moves in the blood vessels of the circulatory system throughout the body	*Is stationary as the outermost layer of cells of the mouth*	
	(b)	*Carbon dioxide can dissolve (in the cytoplasm) in red blood cell;* *Attached to (amino group of) haemoglobin/ carried as carbaminohaemoglobin;* *Reacts with water to form carbonic acid in the presence of carbonic anhydrase + carbonic acid then dissociates to produce hydrogen carbonate (which diffuses out of RBC into plasma).*			[3]
	(c)	**(i)**	Resting systolic pressure: *16kPa/17kPa* Resting diastolic pressure: *10kPa*		[1]
		(ii)	*Systolic blood pressure increases from 16 kPa to 27 kPa during*		[3]

			exercise; *Heart muscles contract more strongly to send more blood to muscles;* *This brings more oxygen and glucose for cell respiration to release energy for muscle contraction.*	
		(iii)	*Diastolic blood pressure is the blood pressure when the heart muscle is at the relaxed state after each contraction and this is not affected by exercise as the heart returns to the same resting state after each contraction.*	[1]
		[Total: 10 marks]		