1.3 Cardiovascular System: The Heart and Blood Vessels: 10-minute Pack

AQA 8582 · Calculators not allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 The heart is a four-chambered muscular pump. Which chamber receives deoxygenated blood returning from the body?

- ☐ A) Left atrium
- ☐ B) Left ventricle
- ☐ C) Right atrium
- ☐ D) Right ventricle

(Total for Question 1 is 1 mark)

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2 The heart rate response to exercise can be estimated using the formula: maximum heart rate (in beats per minute) = 220 minus age (in years).

A 15-year-old hockey player wants to estimate their maximum heart rate.

(a) Using the formula given, calculate the hockey player's estimated maximum heart rate. **(1)**

.....

(b) State why this figure is described as an 'estimated' maximum heart rate rather than an exact one. **(1)**

(Total for Question 2 is 2 marks)

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3 A rower has a resting heart rate of 48 beats per minute, well below the average for an untrained adult. Explain why regular aerobic training, such as rowing, causes resting heart rate to decrease over time.

.....

.....

(Total for Question 3 is 2 marks)

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4 State the term used to describe an abnormally low resting heart rate, commonly seen in highly trained endurance athletes.

.....

(Total for Question 4 is 1 mark)

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5 Table 1 gives descriptions of structures in the cardiovascular system, with the structure name missing.

Table 1

Part	Description of structure
(a)	Carries oxygenated blood from the left ventricle to the body
(b)	Carries deoxygenated blood from the right ventricle to the lungs
(c)	Carries oxygenated blood from the lungs to the left atrium
(d)	Carries deoxygenated blood from the body to the right atrium
(e)	Tiny blood vessels, one cell thick, where gas and nutrient exchange takes place

(a) Name the vessel described in row (a) of Table 1. **(1)**

(b) Name the vessel described in row (b) of Table 1. **(1)**

(c) Name the vessel described in row (c) of Table 1. **(1)**

(d) Name the vessel described in row (d) of Table 1. **(1)**

(e) Name the vessel described in row (e) of Table 1. **(1)**

(Total for Question 5 is 5 marks)

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Mark scheme · 1.3 Cardiovascular System: The Heart and Blood Vessels: 10-minute Pack

Question 1

C (right atrium) **B1**

Answer: C (right atrium)

Question 2

(a) 205 bpm (220 - 15 = 205) **B1**

(a) Answer: 205 beats per minute

(b) the formula is a general average/prediction based on age alone; an individual's true maximum heart rate can vary from this due to genetics, fitness level and other individual factors, oe **B1**

(b) Answer: It is only an average prediction based on age; an individual's true maximum heart rate can vary from this figure due to genetics, fitness level and other individual factors.

Question 3

regular aerobic training causes cardiac hypertrophy (the heart muscle, especially the left ventricle, enlarges/thickens) and increases stroke volume (the volume of blood pumped out per beat), oe **B1**

because more blood is pumped with each beat, the heart does not need to beat as often at rest to circulate the same amount of blood, so resting heart rate decreases (bradycardia), oe **B1**

Answer: Regular aerobic training causes cardiac hypertrophy and increases stroke volume, so more blood is pumped with each beat; because the same resting cardiac output can be achieved with fewer, stronger beats, resting heart rate decreases (a trained athlete's bradycardia).

Question 4

bradycardia **B1**

Answer: Bradycardia

Question 5

(a) aorta **B1**

(a) Answer: Aorta

(b) pulmonary artery **B1**

(b) Answer: Pulmonary artery

(c) pulmonary vein **B1**

(c) Answer: Pulmonary vein

(d) vena cava **B1**

(d) Answer: Vena cava

(e) capillaries **B1**

(e) Answer: Capillaries

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