

Transport in animals practice questions

15 questions • 42 marks • mark scheme at the back

For Cambridge IGCSE Combined Science 0653. **Supplement** is Extended content, only examined on Papers 2 and 4.

Name

Total / 42

Circulatory systems **Spec B9.1**

1 Which statement describes the circulatory system? [1 mark]

- A. ☐ A pump and valves only
- B. ☐ Blood vessels, a pump and valves that ensure one-way flow of blood
- C. ☐ Blood vessels and a pump that allow blood to flow in both directions
- D. ☐ A pump that moves blood and air

2 (a) Name the pump of the circulatory system. [1] (b) State the job of valves in the circulatory system. [1] [2 marks]

The heart **Spec B9.2**

3 State three ways in which the activity of the heart may be monitored. [3 marks]

4 **Supplement** [4 marks]

Describe how the heart pumps blood out of the ventricles, including the action of the valves.

Blood vessels Spec B9.3

8 Which type of blood vessel contains valves? [1 mark]

- A. ☐ Artery
- B. ☐ Capillary
- C. ☐ Vein
- D. ☐ Aorta

9 Describe three differences between the structure of an artery and the structure of a vein. [3 marks]

10 Supplement [4 marks]

Explain how the structure of arteries and veins is related to the pressure of the blood they carry.

Blood Spec B9.4

11 Which component of blood transports urea? [1 mark]

- A. ☐ Red blood cells
- B. ☐ Platelets
- C. ☐ Plasma
- D. ☐ White blood cells

12 List the four components of blood. [2 marks]

13 Describe two features that help you to identify a red blood cell in a photomicrograph. **[2 marks]**

.....

.....

.....

14 State the function of (a) red blood cells, including the role of haemoglobin, (b) white blood cells, (c) plasma. **[4 marks]**

.....

.....

.....

.....

.....

.....

15 **Supplement** **[2 marks]**

State two roles of blood clotting.

.....

.....

.....

Mark scheme

One mark for each point unless a maximum is given. Words in brackets are not needed for the mark.

1. [1]

B B (1) Vessels, pump and valves for one-way flow

2. [2]

- heart (1)
- stop blood flowing backwards / ensure one-way flow of blood (1)

3. [3]

- ECG (1)
- pulse rate (1)
- listening to the sounds of the valves closing / using a stethoscope (1)

4. [4] **Supplement**

- ventricles contract (1)
- atrioventricular valves close, stopping backflow into the atria (1)
- semilunar valves open (1)
- blood forced into the aorta and pulmonary artery (1)
- semilunar valves close when ventricles relax to prevent backflow (1)
- Max 4

5. [5] **Supplement**

- (a) $126 - 72 = 54$ (1)
- $54 \div 72 \times 100 = 75\%$ (1)
- (b) muscles respire faster / more aerobic respiration (1)
- need more oxygen and glucose (1)
- faster heart rate delivers these faster and removes carbon dioxide / lactic acid faster (1)

6. [4] **Supplement**

- (a) fatty deposits build up in the coronary arteries (1)
- which blocks / narrows the arteries so less blood flows (1)
- less oxygen / glucose reaches the heart muscle, (may cause) a heart attack (1)
- (b) genetic predisposition / age / sex (1) allow family history

7. [4] **Supplement**

- diet low in saturated fat reduces fatty deposits (1)
- less salt / more fruit and vegetables helps healthy arteries and blood pressure (1)
- exercise strengthens the heart muscle / lowers blood pressure (1)
- exercise helps control body mass (1)
- other risk factors such as age, sex or genes cannot be changed (1)
- Max 4

8. [1]

C C (1) Veins have valves

9. [3]

- artery wall thicker than vein wall (1)
- artery lumen narrower than vein lumen (1)
- veins have valves, arteries do not (1)

10. [4] Supplement

- arteries carry blood at high pressure (1)
- thick walls with muscle and elastic fibres withstand the pressure (1) allow narrow lumen maintains pressure
- veins carry blood at low pressure so walls are thinner / lumen is wide (1)
- valves in veins stop backflow (1)

11. [1]

C C (1) Plasma transports urea

12. [2]

- red blood cells, white blood cells (1)
- platelets, plasma (1)

13. [2]

- no nucleus (1)
- small / round / pale in the middle / more numerous (1)
- allow biconcave shape

14. [4]

- (a) transport oxygen (1)
- haemoglobin combines with oxygen (1)
- (b) phagocytosis and antibody production (1)
- (c) transports blood cells / ions / nutrients / urea / hormones / carbon dioxide (1)

15. [2] Supplement

- prevents blood loss (1)
- prevents entry of pathogens (1)