

Past-paper walk-through

Heart ■ 9.2

eXercise

Questions in this set

- 0610/23 N25 Q16 ■ 1 mark
- 0610/43 N25 Q4 ■ 14 marks
- 0610/22 J25 Q17 ■ 1 mark
- 0610/23 J25 Q15 ■ 1 mark
- 0610/22 M25 Q16 ■ 1 mark

Reading the mark scheme

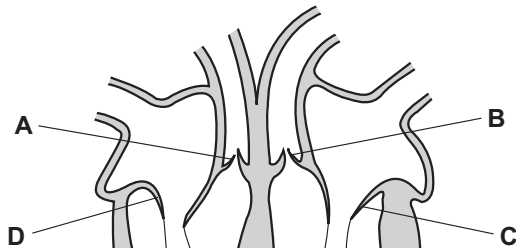
- **B1** a mark that stands on its own – the point is either made or not.
- **M1** a *method* mark: the right approach, even if the number is wrong.
- **A1** an *answer* mark, and it usually needs its M mark first.
- **C1** a working mark on the way to the answer.
- **//** separates answers the examiner accepts equally.
- **ecf** = error carried forward: a later part is marked on your own earlier answer.
- **owtte** = “or words to that effect” – the wording need not match.

Question 16

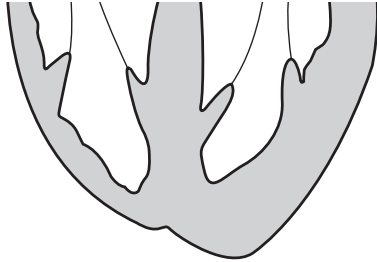
0610/23 N25 ■ Q16 ■ 1 mark

16 The diagram shows a section through a human heart.

Which structure is an atrioventricular valve in the right side of the heart?



Question 16



Solution 16

Answer: **D**

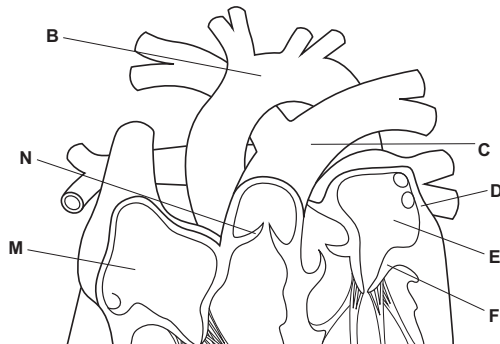
Why

- An atrioventricular valve sits between an atrium and the ventricle below it.
- The right side of the heart is on the *left* of a conventional diagram.
- So find the valve between the right atrium and the right ventricle – the tricuspid.

Question 4

0610/43 N25 ■ Q4 ■ 14 marks

- 4 Fig. 4.1 shows a section through a human heart and the main blood vessels.



Question 4



Fig. 4.1

(a) (i) State the letter in Fig. 4.1 that identifies:

Question 4

Question 4

[2]

- (ii) Explain why the heart wall at **H** is thicker than the heart wall at **D** in Fig. 4.1.

Question 4

- (iii) Table 4.1 contains eight descriptions of parts of the pathway a red blood cell takes as it moves from the vena cava to the aorta.

Using Fig. 4.1, complete Table 4.1 by numbering the descriptions to show the correct sequence.

Two have been done for you.

Table 4.1

description	sequence
blood enters C	
blood enters E and then E contracts	
blood enters M and then M contracts	1

Question 4

blood travels to lungs	
blood moves into G	
blood moves into B	8
N opens	
blood moves into K	

[2]

(b) Fig. 4.2 shows the effect of exercise on heart rate.



Question 4

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Question 4

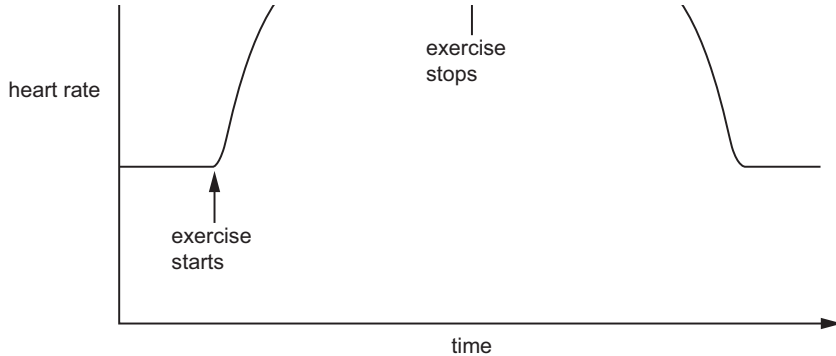


Fig. 4.2

- (i) Explain the effect of exercise on heart rate shown in Fig. 4.2.

Question 4

- (ii) A lack of exercise can increase the risk of coronary heart disease.

State **three** other factors that can increase the risk of coronary heart disease.

Question 4

Question 4

Question 4

[3]

[Total: 14]

Solution 4

(a)(i)

Mark scheme

- J ;
- F ;
- 2 R each additional letter

Solution 4

(a)(ii) Mark scheme

- any two from:
 - 1
 - (left ventricle / H) contains more muscle ; ora
 - 2
 - (muscle) contracts / pumps, with more force ; ora
 - 3
 - (contraction) creates a high(er) pressure ; ora
 - 4

Solution 4

- blood (leaving the ventricle) is required to move further / out of the heart / to
- aorta / to the (whole) body / left atrium is only pushing blood to the ventricle ;
- 2

Solution 4

(a)(iii) Mark scheme

- description
- sequence
- blood enters C
- 4
- blood enters E and then E contracts
- 6
- blood enters M and then M contracts
- 1

Solution 4

- blood travels to lungs
- 5
- blood moves into G
- 7
- blood moves into B
- 8
- N opens
- 3
- blood moves into K
- 2

Solution 4

- ;;
- 2 all correct = 2 marks
- four correct / only 2 wrong = 1 mark
- 0610/43
- October/November 2025
- Guidance

Solution 4

(b)(i) Mark scheme

- any five from:
- 1
- (exercise can lead to release of) adrenaline that increases heart rate ;
- 2
- (exercise results in) increased (rate of) blood (flow) to muscle (cells) ;
- 3
- needed for (delivery of), oxygen / glucose OR removal of carbon dioxide ;
- 4

Solution 4

- respiration releases energy ;
- 5
- energy required for (muscle) contraction ;
- 6
- (exercise can lead to) anaerobic respiration / production of, lactic acid / lactate ;
- 7
- correct ref. to oxygen debt ;
- 8
- (heart rate remains high after exercise) to remove, lactic acid / lactate

Solution 4

- (quickly) from muscles / to liver OR to continue supplying oxygen (to repay the oxygen debt) ;
- 9
- lactic acid / lactate, broken down / (aerobically) respired / converted to glucose / carbon dioxide and water / oxidised, in liver;
- 10 AVP ;
- 5
- e.g. increased, carbon dioxide / acidity,
- in the blood increases heart rate

Solution 4

(b)(ii) Mark scheme

- any three from:
- 1
- diet OR a diet high in, salt / saturated fats / cholesterol ;
- 2
- (uncontrolled) stress ;
- 3
- smoking (tobacco) ;
- 4

Solution 4

- genetic (predisposition) ;
- 5
- (old) age ;
- 6
- sex ;
- 7 and 8 AVP ;;
- 3
- e.g. high blood pressure / excessive
- alcohol consumption / obesity
- Guidance

Question 17

0610/22 J25 ■ Q17 ■ 1 mark

- 17** Which structure in the heart separates oxygenated and deoxygenated blood?
- A** atrioventricular valve
 - B** muscle wall of left atrium
 - C** semilunar valve
 - D** septum

Solution 17

Answer: **D**

Why

- The septum is the wall of muscle dividing the left side of the heart from the right.
- The right side carries deoxygenated blood and the left carries oxygenated blood.
- The septum keeps them apart; the valves stop backflow but do not separate the two sides.

Question 15

0610/23 J25 ■ Q15 ■ 1 mark

15 Through which pathway does blood leave the heart?

- A** through arteries from the atria
- B** through arteries from the ventricles
- C** through veins from the atria
- D** through veins from the ventricles

Solution 15

Answer: **B**

Why

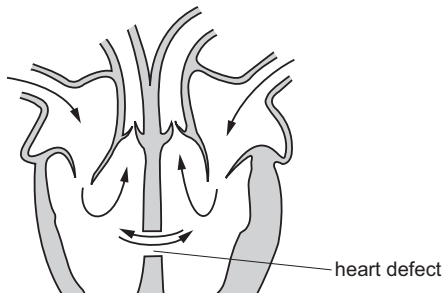
- Blood leaves the heart through arteries – always.
- It is pumped out by the ventricles, which are the thick-walled lower chambers.
- The atria receive blood coming *in*, through veins.

Question 16

0610/22 M25 ■ Q16 ■ 1 mark

16 The diagram shows a heart defect that some babies are born with.

The arrows indicate direction of blood flow.



Question 16



Which statement explains why this heart defect might cause the baby to have poor growth?

- A** Blood flows to the lungs at high pressure increasing rate of gas exchange.
- B** Blood flows to the lungs at low pressure decreasing rate of gas exchange.
- C** Mixing of blood results in less oxygen available for respiration.
- D** Mixing of blood results in more glucose available for respiration.

Solution 16

Answer: **C**

Why

- A hole between the two sides of the heart lets oxygenated and deoxygenated blood mix.
- The blood pumped to the body then carries less oxygen than it should.
- Less oxygen reaching the tissues means less aerobic respiration, so the baby tires easily.