

The heart: practice questions

5 questions • 20 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 / 20

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

2 **Supplement** Describe how the heart pumps blood out of the ventricles, including the action of the valves.**[4 marks]**

3 Supplement

[5 marks]

A student measured their heart rate at rest, after exercise and during recovery. (a) Calculate the percentage increase in heart rate from resting to after 2 minutes of running. [2] (b) Explain why heart rate increases during exercise. [3]

Heart rate of a student	
Activity	Heart rate / beats per minute
Resting	72
After 2 minutes of running	126
5 minutes after stopping	84

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4 Supplement

[4 marks]

(a) Describe coronary heart disease. [3] (b) State one risk factor for coronary heart disease that a person cannot change. [1]

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5 Supplement

[4 marks]

Discuss the roles of diet and exercise in reducing the risk of coronary heart disease.

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Mark scheme

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

1. [3]

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

2. [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

3. [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)

4. [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

5. [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