

# Animal Tissues, Organs and Organ System

## Mark Scheme 1

<b>Level</b>	GCSE (9-1)
<b>Subject</b>	Combined Science: Trilogy - Biology
<b>Exam Board</b>	AQA
<b>Topic</b>	4.2 Organisation
<b>Sub-Topic</b>	Animal Tissues, Organs and Organ System
<b>Difficulty Level</b>	Bronze Level
<b>Booklet</b>	Mark Scheme 1

**Time Allowed:** 60 minutes

**Score:** /57

**Percentage:** /100

**Grade Boundaries:**

**M1.(a)** 8 (micrometres) 1

(b) red blood cell(s) 1

white blood cell(s)  
*accept named cell*  
*eg phagocyte / lymphocyte* 1

(plasma)  
transports proteins / dissolved substances / food (molecules) / urea / hormones /  
blood  
cells 1

(c) any **one** from:  

- you could lose a lot of blood
- bleed internally

*allow bleeding would not stop*  
*allow could bleed to death* 1 [5]

**M2.(a)** mitosis  
*extra box ticked negates mark* 1

(b) cell division is uncontrolled  
*extra box ticked negates mark* 1

(c) any **one** from:

- smoking / tar
- alcohol
- carcinogens
- allow named chemical*
- viruses (living in cells)
- (ionising) radiation
- accept UV / X-rays / gamma waves*

1

(d) bar plotted at 78%

*ignore width of bar*

1

(e) testicular

*extra box ticked negates mark*

1

(f) prostate

*extra box ticked negates mark*

1

(g) any **two** from:

- improved treatment / drugs
- earlier diagnosis
- more cancer screening
- improved patient knowledge (of risk factors)
- allow improved patient diet / lifestyle*

2

[8]

**M3.(a)** (A) right atrium

1

- (B) right ventricle 1
- (b) To take blood from the lungs to the heart 1
- (c) keeps the (coronary) artery open / wide 1
- so the blood can carry glucose and oxygen 1
- to the heart (muscle) 1
- for respiration 1
- if marking points 2, 3 and 4 not awarded allow 1 mark for 'keep a (constant) flow of blood to the heart (muscle)'*
- (d) bar **D** correctly plotted 1
- bar **E** correctly plotted 1
- ± 0.5 small squares*
- (e) twice / two times (more likely) 1
- (f) **Level 3 (5–6 marks):**  
A detailed and coherent evaluation is provided that considers a range of relevant points

about how well the data correlates with the statement, quoting relevant comparisons and comes to a conclusion consistent with the reasoning.

### **Level 2 (3–4 marks):**

An attempt to relate relevant points within the data and come to a conclusion. The logic may be inconsistent at times but builds towards a coherent argument.

### **Level 1 (1–2 marks):**

Discrete, relevant points made, attempting to apply understanding of the factors involved in development of CHD to the data in the table. The logic may be unclear and the conclusion, if present, may not be consistent with the reasoning.

### **0 marks:**

No relevant content

### **Indicative content**

data that supports statement:

- country A has the highest death rate at 285 deaths per 1000 and the lowest consumption at only 180 kg per person
- death rate in country E is less than half that in country A (125 compared with 285) and consumption is higher (244 compared with 180)
- other countries with lower death rates than A have higher consumption (eg country B 250 deaths per 1000 but consumption of 320 kg per person)

arguments against statement:

- but most of the data on the graph does not show clear correlation between death rates and consumption of data
- eg death rate in country B is second highest at 250 deaths per 1000 but consumption is highest at 320 kg per person, nearly double that in A where death rate is only 35 per 1000 more
- differences show no clear pattern – eg in countries where death rate is much lower the consumption is not a similar proportion higher (cf country D death rate just under half that in A but consumption not double that in A)
- there may be other factors affecting death rate that are not reported, such as smoking, obesity, exercise, stress

6

[16]

**M4.(a)** in the blood(stream)

*allow plasma*

*ignore dissolved or in solution*

1

(b) all three plots correct

*accept two correct plots for 1 mark*

2

	suitable line drawn	1	
(c)	1 hour	1	
(d)	230–185 <i>identification of steepest part of graph and correct readings taken</i>	1	
	= 45	1	
(e)	line on graph showing extrapolation for person <b>B</b> correct value read from graph (at 130 mg per 100 cm <sup>3</sup> ) <i>allow 1 mark for a value of 4.5–5 hours if no extrapolation shown</i>	2	[9]
<b>M5.(a)</b>	(i) 64	1	
	(ii) 36 <i>allow e.c.f from (i) i.e. 100 – answer given in (a)(i)</i>	1	
	(iii) any <b>one</b> from: • only considers 16-year-olds <i>ignore lack of evidence</i> <i>allow does not refer to all ages</i> • only about some / 5 countries <i>allow does not refer to all countries.</i>	1	
(b)	the more exercise done the healthier a person is <i>allow the more exercise done the higher the health rating</i> <i>allow the less exercise done the lower the health rating</i>	1	

- (c) having a high cholesterol level 1
- (d) (i) antibodies 1
- (ii) antibiotics 1
- [7]

- M6.(a)** (i) alveoli / alveolus
- allow air sacs*
- allow phonetic spelling* 1
- (ii) any **one** from:
- protection (of lungs / heart)
  - help you breathe / inflate lungs.
- 1
- (b) (i) diffusion 1
- (ii) capillaries 1
- (iii) any **two** from:
- (have many) alveoli
  - allow air sacs*
  - large surface / area
  - thin (exchange) surface **or** short diffusion pathway
  - accept only one / two cell(s) thick*
  - good blood supply / many capillaries
  - allow (kept) ventilated or maintained concentration gradient.*
- 2
- [6]

- M7.(a)** (i) A = (cell) membrane 1

B = cytoplasm

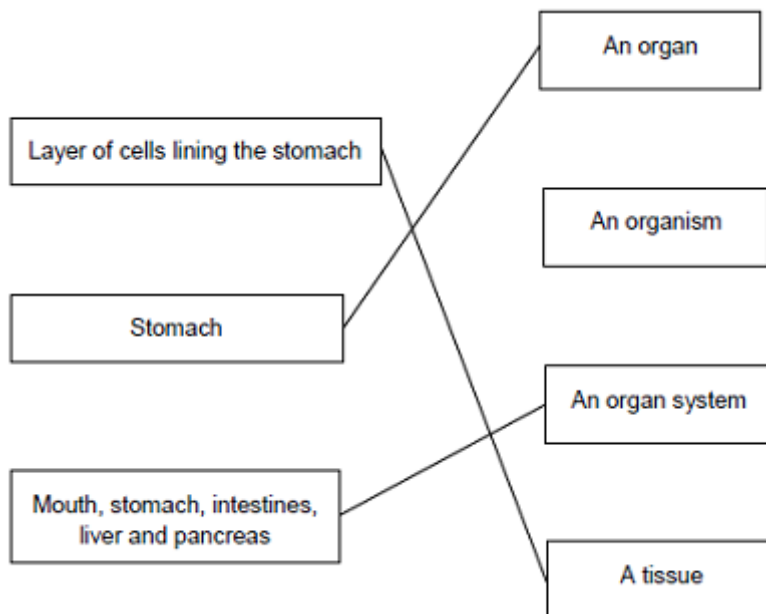
do **not** accept cytoplasm

1

(ii) To control the activities of the cell

1

(b)



extra lines cancel

3

[6]