

## **Science: Half Term Revision**

### **How To Use This Booklet**

- **Decided whether you want to revise Biology, Chemistry or Physics.**
- **Set a timer for 25 minutes.**
- **Open the booklet at the section you want to start and work for twenty five minutes answering as many questions as you can**
- **Check your answers with the mark scheme in the back**
- **Make a revision card to help you remember anything that you got wrong – use the keywords on the mark scheme to guide you.**

**You should only work in 25min – 1hr time slots. After this take a break or revise another subject. There is 60 minutes worth of questions for each science subject.**

**60 minutes on Biology B2 (Test on Tuesday 26<sup>th</sup> February = 11 days time!)**

**Q1.**

The heart is part of the circulatory system.

- (a) (i) Name **one** substance transported by the blood in the circulatory system.

\_\_\_\_\_

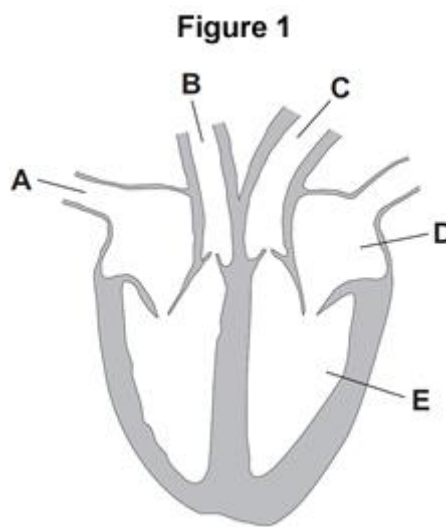
(1)

- (ii) What is the main type of tissue in the heart wall?

\_\_\_\_\_

(1)

- (b) **Figure 1** shows the human heart.



- (i) Which blood vessel, **A**, **B** or **C**, takes blood to the lungs?

(1)

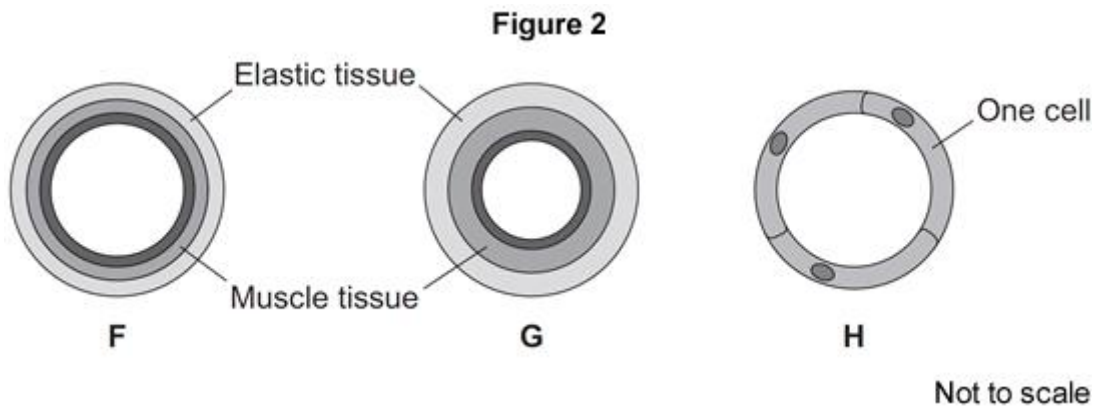
- (ii) Name parts **D** and **E** shown in **Figure 1**.

**D** \_\_\_\_\_

**E** \_\_\_\_\_

(2)

- (c) **Figure 2** shows three types of blood vessel, **F**, **G** and **H**.



(i) What type of blood vessel is **F**?

Tick (✓) **one** box.

an artery

a capillary

a vein

(1)

(ii) A man needs to have a stent fitted to prevent a heart attack.

In which type of blood vessel would the stent be placed?

Tick (✓) **one** box.

an artery

a capillary

a vein

(1)

(iii) Explain how a stent helps to prevent a heart attack.

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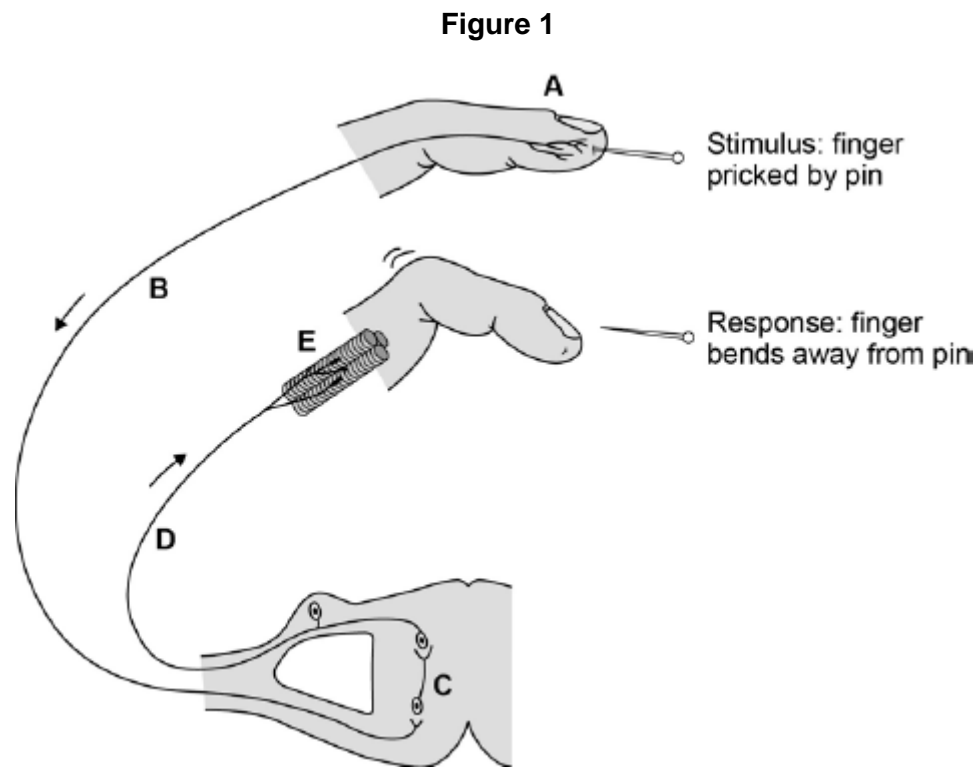
(2)

(Total 9 marks)

**Q2.**

Our nervous system controls our reactions.

**Figure 1** shows the part of the nervous system involved in the rapid response to a stimulus.



(a) What is this type of rapid response called?

Tick **one** box.

- Circular action
- Fast action
- Forced action
- Reflex action

(1)

(b) Features of the nervous system are labelled **A, B, C, D** and **E** on **Figure 1**.

Draw **one** line from each feature to the correct label from **Figure 1**.

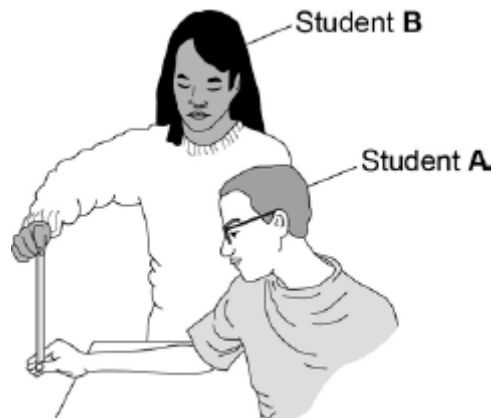
Feature	Label
	<b>A</b>
Effector	<b>B</b>
Relay neurone	<b>C</b>
Sensory neurone	<b>D</b>
	<b>E</b>

(3)

(c) Two students compare their reactions using a ruler.

This is the method used.

1. Student **A** sits with his elbow on a table top.
2. Student **B** holds the ruler so the bottom of the ruler is level with the top of student **A**'s thumb.
3. Student **B** drops the ruler.
4. Student **A** catches the ruler.
5. Record the drop distance.
6. Repeat steps 1 to 5 four more times.
7. Repeat the whole experiment with student **A** dropping the ruler and student **B** catching it.



Both students are right-handed.

The students are testing the hypothesis:

**the drop distance of the ruler is smaller when a right-handed person uses their right hand to catch the ruler.**

Student **A** uses his right hand to catch the ruler.

Student **B** uses her left hand to catch the ruler.

Complete the sentence.

Use an answer from the box.

<b>control</b> <b>dependent</b> <b>independent</b>
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The drop distance was the \_\_\_\_\_ variable.

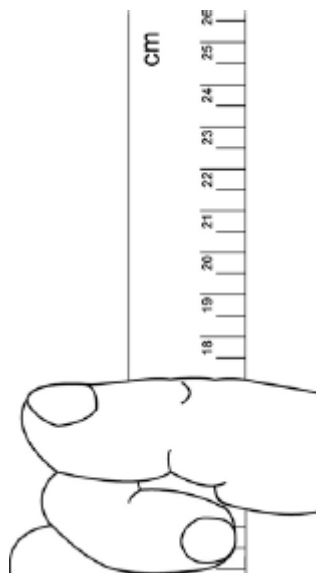
(1)

(d) The table below shows the students' results.

Student	Drop distance in cm				
	Test 1	Test 2	Test 3	Test 4	Test 5
Student <b>A</b>	17.5	15.5	15.0	23.5	17.0
Student <b>B</b>	20.5		19.5	21.0	19.0

**Figure 2** shows student **B**'s Test 2 result.

**Figure 2**



Use **Figure 2** to complete the missing result for Test 2.

Write the answer in the table above.

(1)

- (e) What was the resolution of the ruler the students used?

Tick **one** box.

0.1 cm	<input type="checkbox"/>
0.5 cm	<input type="checkbox"/>
1 cm	<input type="checkbox"/>
10 cm	<input type="checkbox"/>

(1)

- (f) One of the results in the table above is anomalous.

Identify the anomalous result.

Give the reason why you chose your answer.

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(2)

- (g) The students are testing the hypothesis:

**the drop distance of the ruler is smaller when a right-handed person uses their right hand to catch the ruler.**

The results in the table above are not a good test of the hypothesis.

What is one reason why?

Tick **one** box.

- The drop distances are very variable
- The drop distance for Student **A** is sometimes bigger than the drop distance for Student **B**
- The results are for the left and right hands of different people
- The drop distances are not measured accurately enough

(1)  
(Total 10 marks)

**Q3.**

This question is about reproduction.

- (a) Complete the sentences.

Choose answers from the box.

<b>asexual</b>	<b>clones</b>	<b>eggs</b>	<b>gametes</b>
<b>meiosis</b>	<b>mitosis</b>	<b>sexual</b>	<b>variation</b>

Identical offspring are produced by \_\_\_\_\_ reproduction.

These offspring are called \_\_\_\_\_ .

In another form of reproduction male and female \_\_\_\_\_ join at fertilisation.

This leads to \_\_\_\_\_ in the offspring.

The embryo grows by a type of cell division called \_\_\_\_\_ .

(5)

- (b) The body cells of a kangaroo have 16 chromosomes.

How many chromosomes will an egg cell of a kangaroo have?

Tick **one** box.

- 4  8  16  32

(1)



(c) Which sex chromosomes will be in the body cells of a male kangaroo?

Tick **one** box.

XX  XZ  XY  YZ

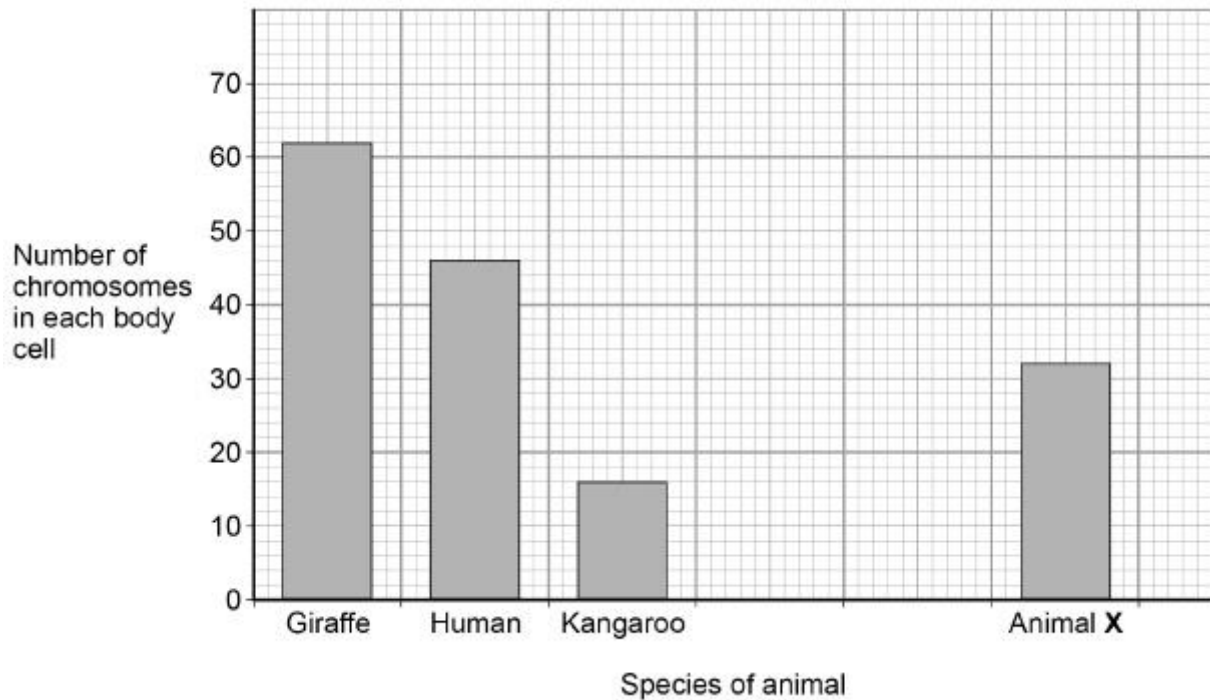
(1)

Different species of animal have different numbers of chromosomes in their body cells.

The table shows the chromosome number of some species.

Species of animal	Number of chromosomes in each body cell
Giraffe	62
Human	46
Kangaroo	16
Snail	24
Zebra fish	50

(d) Plot the data from the table for the snail and for the zebra fish on the graph.



(2)

(e) Look at the graph.

How many more chromosomes are there in the body cells of giraffes than in the body cells of animal X?

\_\_\_\_\_

Number of chromosomes = \_\_\_\_\_

(1)

(f) A student concluded:

‘the bigger an animal, the more chromosomes it has in each body cell.’

This is **not** a valid conclusion.

Give **one** reason why.

\_\_\_\_\_

\_\_\_\_\_

(1)

(Total 11 marks)

#### Q4.

A person’s characteristics can be due to:

- environmental causes
- genetic causes
- both environmental and genetic causes.

(a) Complete **Table 1**.

Put a tick to show what each characteristic is due to.

**Table 1**

Characteristic	Characteristic due to		
	Environmental causes	Genetic causes	Both environmental and genetic causes
Eye colour			
A scar			
Weight			

(3)

(b) Draw **one** line from each key term to the correct definition.

<b>Key term</b>	<b>Definition</b>
	The set of alleles for a characteristic
Genotype	The genus of an organism
	The inheritance of chromosomes
Phenotype	The mutation of genes
	The physical characteristic of an organism

(2)

(c) Farmers use selective breeding to control the characteristics in cows.

**Table 2** shows the stages of selective breeding in cows.

Complete **Table 2** to show the correct order of the stages.

The first stage has been numbered for you.

**Table 2**

Stage in selective breeding	Order of stage
Cows are bred over many generations	
Parents are bred together	
Cows with the desired characteristics are chosen	1
Calves with the most desired characteristics are bred together	

(2)

(d) Farmers selectively breed cows for many different reasons.

Suggest **two** characteristics that cows may be bred for.

Do **not** suggest coat colour.

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_ (2)

(e) Selective breeding can lead to problems.

Suggest how problems caused by selective breeding in cows can have negative financial effects for the farmer.

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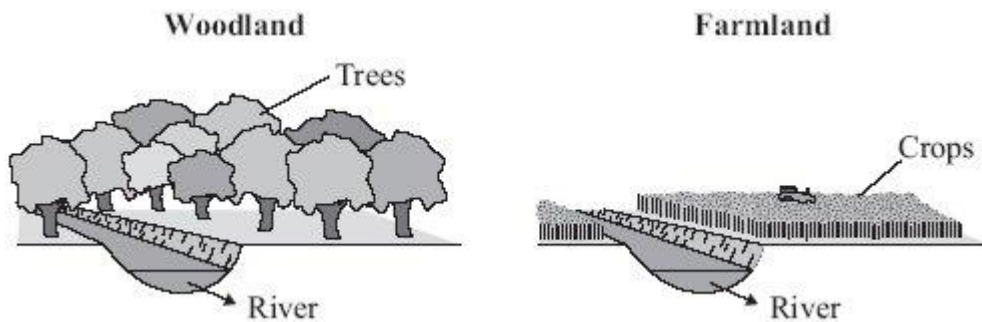
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(2)  
(Total 11 marks)

**Q5.**

The drawings show some woodland and some farmland. Both have a river flowing through.



(a) (i) There is a wider variety of wildlife in the woodland than in the farmland.

Give **one** reason why.

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(1)

(ii) Farmers remove woodland to provide space for growing crops.

Give **two** other reasons why humans remove woodland.  
Do **not** include the uses of wood in your answers.

1. \_\_\_\_\_

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2. \_\_\_\_\_

---

(2)

(b) Many farmers spray chemicals on their fields.

Draw a ring around the correct word to complete each sentence.

(i) To make crops grow larger, farmers use

fertilisers
herbicides
pesticides

(1)

(ii) To kill insects that feed on the crop, farmers use

fertilisers
herbicides
pesticides

(1)

(iii) There is a wider variety of wildlife in the river flowing through the woodland than in the river flowing through the farmland.

Give **one** reason why.

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(1)

(c) The population of the UK has increased over the last two hundred years. This increase in population has resulted in damage to the environment.

Apart from farming methods, give **two** ways in which humans damage the environment.

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

(2)

(Total 8 marks)

**Q6.**

(a) Complete the sentences about evolution.

Draw a ring around the correct answer to complete each sentence.

(i) Darwin suggested the theory of evolution by 

artificial
natural
asexual

 selection.

(1)

(ii) Darwin's theory of evolution says that all species of living things have

evolved from 

artificial
complex
simple

 life forms.

(1)

(iii) Most scientists believe that life first developed about 

three billion
three million
three thousand

years ago.

(1)

(b) Darwin's theory of evolution was only slowly accepted by other people.

Give **two** reasons why.

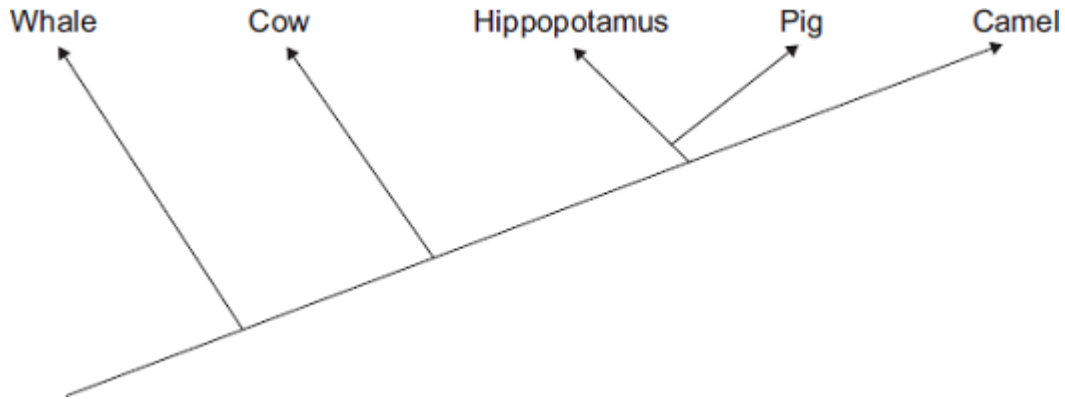
1 \_\_\_\_\_  
\_\_\_\_\_

2 \_\_\_\_\_  
\_\_\_\_\_

(2)

(c) **Diagram 1** shows one model of the relationship between some animals.

**Diagram 1**



(i) Complete the sentence.

The model shown in **Diagram 1** is an evolutionary \_\_\_\_\_ .

(1)

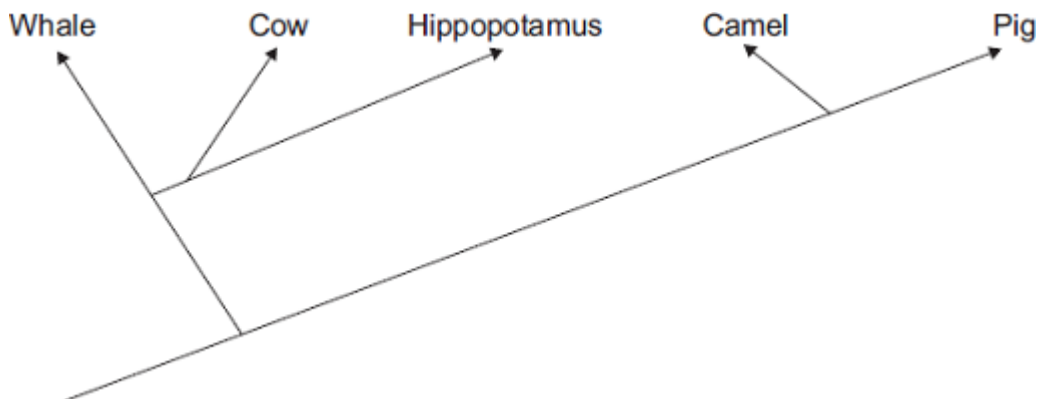
(ii) Which **two** of the animals in **Diagram 1** are most closely related?

\_\_\_\_\_ and \_\_\_\_\_

(1)

(iii) **Diagram 2** shows a more recent model of the relationship between the animals.

**Diagram 2**



Suggest **one** reason why scientists have changed the model of the relationships between the animals shown in the diagram.

Draw a ring around the correct answer.

**more powerful  
computers**

**new evidence  
from fossils**

**new species  
discovered**

(1)

(Total 8 marks)

## Mark schemes

### Q1.

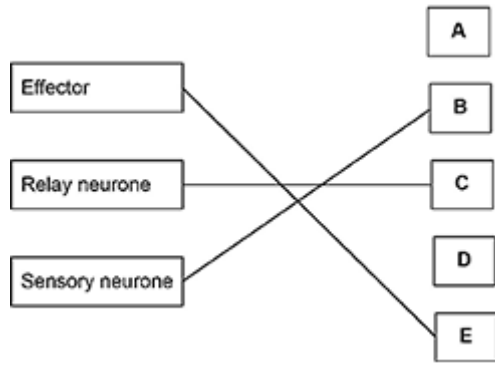
- (a) (i) any **one** from:
- glucose
  - oxygen
  - carbon dioxide
  - urea
  - water
- allow hormones*  
*allow named example of a product of digestion* 1
- (ii) (cardiac) muscle  
*allow muscular* 1
- (b) (i) **B** 1
- (ii) **D** atrium / atria  
*ignore references to left or right* 1
- E** ventricle(s)  
*ignore references to left or right* 1
- (c) (i) a vein 1
- (ii) an artery 1
- (iii) keeps artery open / wider  
*allow ecf from part cii* 1
- (so) blood / oxygen can pass through (to the heart muscle) 1

[9]

### Q2.

- (a) Reflex action 1
- (b) **Feature** **Label**





*extra lines from the left negate the mark*

- |     |   |   |
|-----|---|---|
|     |   | 3 |
| (c) | dependent   | 1 |
| (d) | 17.0  | 1 |
|     | <i>allow answers in range 17.0–17.3 cm</i>                                    |   |
| (e) | 0.5 cm  | 1 |
| (f) | 23.5  | 1 |
|     | does not fit the pattern <b>or</b> at least 5 cm higher than the other values | 1 |
| (g) | The results are for the left and right hands of different people              | 1 |

**[10]**

**Q3.**

- |     |                             |   |
|-----|-----------------------------|---|
| (a) | asexual                     | 1 |
|     | clones                      | 1 |
|     | gametes                     | 1 |
|     | variation                   | 1 |
|     | mitosis                     | 1 |
|     | <i>in this order</i>        |   |
| (b) | 8                           | 1 |
| (c) | XY                          | 1 |
| (d) | both bars correctly plotted | 1 |

1

correct labels on x-axis

*allow labels mark even if bars incorrect*

1

(e) 30

1

(f) any **one** from:

- because zebra fish is small and has high number of chromosomes
- not all animals are listed
- not enough data
- animals have different sizes during their life but the chromosome number stays the same

*allow other sensible conclusions*

1

[11]

#### Q4.

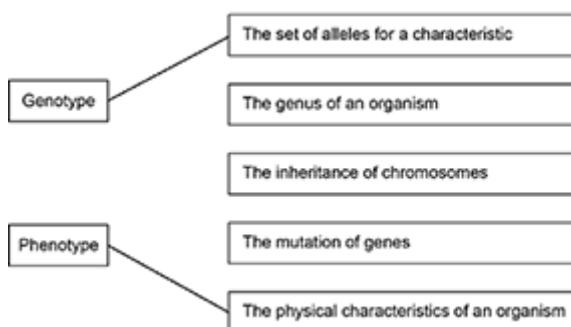
(a)

Characteristic	Environmental	Genetic	Both
Eye colour		✓	
A scar	✓		
Weight			✓

3

(b) **Key term**

**Definition**



*extra lines from the left negate the mark*

2

(c)

Stage in selective breeding	Order of stage
Cows are bred over many	4

generations	
Parents are bred together	2
Cows with the desired characteristics are chosen	1
Calves with the most desired characteristics are bred together	3

*all 3 correct for 2 marks*

*1 or 2 correct for 1 mark*

max. 2

(d) beef / meat

*allow hardiness, disease resistance*

1

milk yield

1

(e) higher veterinary costs

1

less income from sale of (milk and meat) products

1

[11]

### Q5.

(a) (i) (more) habitats / (greater) variety of habitats / range of food  
*allow (more) places / trees for homes **or** different places to live*

*allow no pesticides / herbicides / chemicals sprayed*

*allow more food*

*allow safer / can hide*

*allow effects of machinery*

1

(ii) any **two** from:

- building / houses / factories / etc

*ignore timber / uses of wood*

- roads

- quarrying

- waste dumps / landfill

- grazing

2

(b) (i) fertilisers

1

(ii) pesticides

1

- (iii) pesticide / herbicide / chemicals / sprays  
*allow river (through farmland) polluted*  
*allow correct effect of fertilisers on river organisms*

1

(c) any **two** from

- pollution / named pollutant / combustion / cars
- dumping waste / litter  
*allow 'not recycling'*
- raw materials used up **or** reference to quarries / mines
- chopping down trees
- building / houses / etc
- global warming

2

[8]

**Q6.**

(a) (i) natural

1

(ii) simple

1

(iii) three billion

1

(b) any **two** from:

- reference to religion
- insufficient evidence / couldn't prove it / no proof  
*ignore no evidence*
- mechanism of inheritance / variation not known  
*allow genes / DNA not known about*
- reference to other theories
- reference to Darwin's status

2

(c) (i) tree

1

(ii) hippopotamus **and** pig  
*both required, either order*  
*allow hippo*

1

(iii) new evidence from fossils

1

