

# Cumbernauld Academy Biology Department



S3

BGE and Extension

Homework

# 1 Structure and Variety of cells and their functions

## Homework

1. Name 3 structures found in both an animal and a plant cells? (3)

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2. In the space provided, draw and label an animal cell. (3)



3. Name 2 organelles which can be found in the cytoplasm. (2)

4. Name a cell that lacks a nucleus? (1)

5. Green plants are called producers because they can produce their own food, explain why yeast cells are not classed as producers? (1)

6. Complete the table to match the correct structure to its function. (4)

| Structure     | Function   |
|---------------|--|
| Nucleus       |  |
|               | Site of Chemical Reactions                             |
| Cell Membrane |  |
|               | Prevents the cell bursting and is made with cellulose. |
|               | Site of photosynthesis                                 |
| Vacuoles      |  |
| Mitochondrion |  |
|               | Site of protein synthesis                              |

7. Copy and complete the following table (6)

| Eyepiece power | Objective power | Total Magnification | True size of object viewed | Apparent size of object |
|----------------|-----------------|---------------------|----------------------------|-------------------------|
| 5x             | 20x             | 100x                | 0.01mm                     | 1.0 mm                  |
| 10x            | 10x             |                     |                            | 1.0 mm                  |
| 10x            |                 | 400x                | 0.02 mm                    |                         |
|                | 10x             | 300x                | 0.001 mm                   |                         |
|                | 10x             | 4000x               |                            | 0.4 mm                  |

**Total** 20

## 2. D.N.A

1. Where in a typical cell would chromosomes be found? (1)

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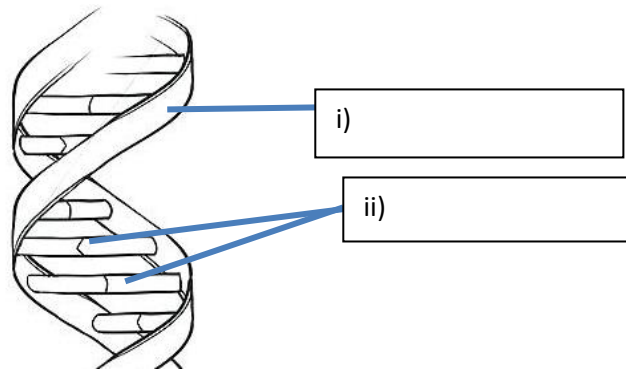
2. a) Name the chemical that is found to make up chromosomes? (1)

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b) Describe the structure of DNA as shown below (2)

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c) Name the parts of the DNA molecule that are labelled in the diagram. (2)



3. Base pairings in D.N.A. are always complimentary.

Which base is complimentary to; i) A ii) T iii) C iv) G? (3)

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4. Explain why DNA is suitable for use by police in helping to identify criminals? (1)

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5. Describe another use of DNA profiling?

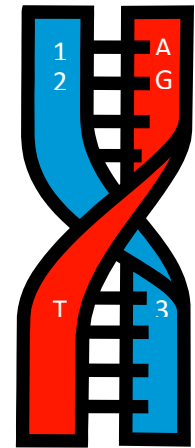
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(1)

6. Underline the correct word in this sentence regarding the function of D.N.A. “ The (number/ order) of (genes/bases) in a chromosome, encodes information for the structure of (proteins/carbohydrates)” (3)

7. The diagram shows a short section of DNA.

The full section of DNA was found to contain 2500 bases, of which 30% were T.



(a) What bases would be found at position 1, 2 and 3? (3)

(b) How many bases in the full section of DNA were A? (1)

(c) What % of the bases in the full section were C? (1)

(d) The number of bases found in the full section of DNA were based on the findings of one sample of cells. How could the results be made more reliable? (1)

**Total      20**

### 3. Producing New Cells

1) Name the process of cell division in multicellular organisms. (1)

\_\_\_\_\_

2) Give two reasons why cell division is important for multicellular organisms? (2)

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

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

3) Underline the correct word to complete the following sentences. (2)

“ Cells created by mitosis contain (the same/ different) genetic information as the original cell. They also have (the same/ different) number of chromosomes in their nucleus.”

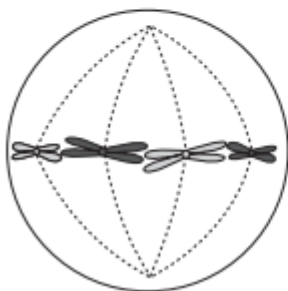
4) Match the stages to their correct definition using a straight line. (2)



chromosomes shorten and thicken

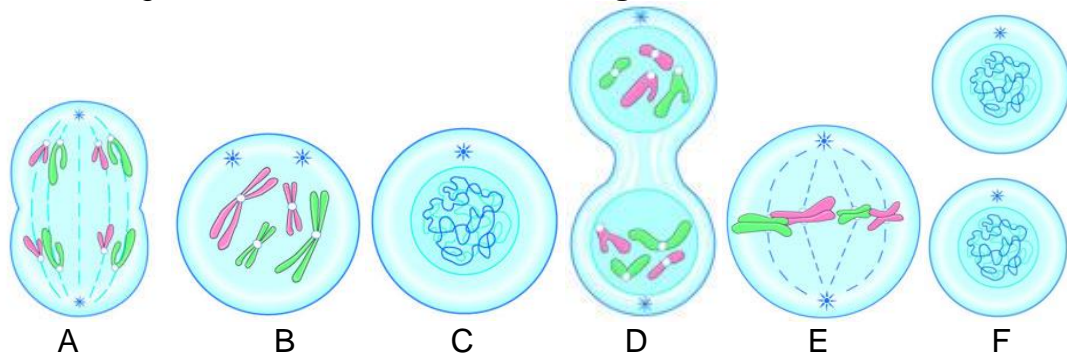
chromosomes line up at the centre of the cell

chromatids are pulled to opposite ends of the cell



nuclear membrane reforms

6. The diagrams (A –F) below show the stages of mitosis but in the wrong order. Put the diagrams in the correct order **starting with C**.



(2)

8. What name is given to the fibres that pull the chromosomes apart in stage A above?

\_\_\_\_\_

(1)

9. (a) Construct a bar chart to show the information in the table below:

(2)

| Species   | Chromosome Complement |
|-----------|-----------------------|
| Kangaroo  | 12                    |
| Cabbage   | 18                    |
| Earthworm | 36                    |
| Rice      | 24                    |
| Guppy     | 46                    |
| Human     | 46                    |

10. A bacterial cell divides every 20 minutes, how many bacterial cells will be present after 2 hours?

Space for working

\_\_\_\_\_cells

(1)

11. (a) Name the type of cells which are unspecialised and have the potential to turn into other cell types in plants and animals.

\_\_\_\_\_ (1)

(b) One source of these cells are from embryos. Describe one advantage and one disadvantage from using these undifferentiated cells from embryos.

Advantage \_\_\_\_\_ (1)

Disadvantage \_\_\_\_\_ (1)

12. Cells that do the same job are grouped together to form \_\_\_\_\_.  
Examples include \_\_\_\_\_ in animals and \_\_\_\_\_ in plants.

(3)

13. Which of the following shows the correct organisation in multicellular organisms?

- A Tissues → Cells → Organs
- B Cells → Tissues → Organs
- C Organs → Cells → Tissues
- D Cells → Organs → Tissues

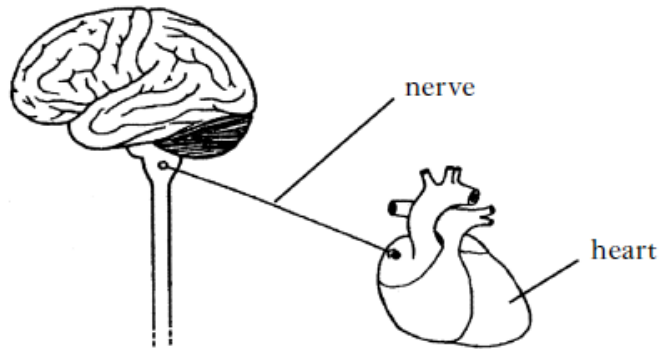
Correct answer \_\_\_\_\_ (1)

**Total** \_\_\_\_\_ **20**



## 4. Control and Communication

1. The diagram below shows part of the central nervous system (CNS) and a nerve to the heart.



(a) (i) **Name** the **two** parts, shown in the diagram, which make up the central nervous system (CNS).

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

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

**(1)**

(ii) **Name** the area of the brain shown, which controls heart rate.

\_\_\_\_\_

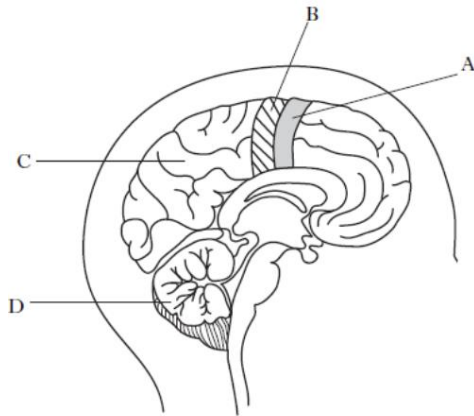
**(1)**

(b) **What** is the function of the inter neurone in a reflex arc?

\_\_\_\_\_

**(1)**

2. **Which** label identifies correctly the part of the brain which controls balance?



Correct answer \_\_\_\_\_ (1)

3. (a) **Complete** the table below to show parts of the brain and their function.

| <i>Part of brain</i> | <i>Function</i>                   |
|----------------------|-----------------------------------|
| Cerebrum             |                                   |
| Cerebellum           |                                   |
|                      | controls breathing and heart rate |

(2)

(b) The following table shows the average brain and body masses of several animals.

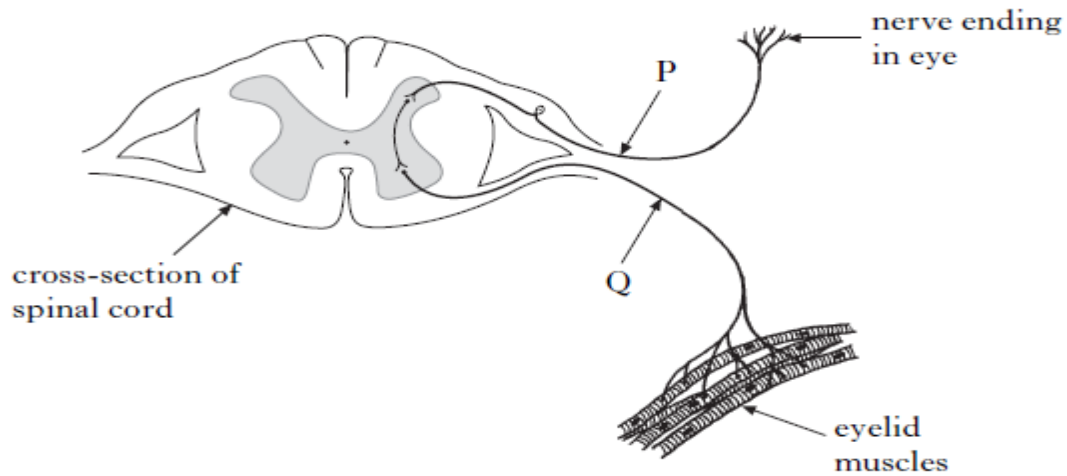
| <i>Animal</i> | <i>Average brain mass (g)</i> | <i>Average body mass (g)</i> | <i>Ratio of brain : body mass</i> |
|---------------|-------------------------------|------------------------------|-----------------------------------|
| Monkey        | 100                           | 7 000                        | 1 : 70                            |
| Kangaroo      | 56                            | 35 000                       | 1 : 625                           |
| Cat           | 30                            | 3 300                        | 1 : 110                           |
| Racoon        | 39                            | 4 290                        | 1 : 110                           |
| Squirrel      | 6                             | 900                          | 1 : 150                           |
| Frog          | 0.1                           | 18                           |                                   |

(i) **Complete** the table to show the ratio of brain : body mass for the frog.

*Space for calculation*

(1)

4. The three types of neuron involved in the reflex arc for blinking are shown in the diagram below.



P \_\_\_\_\_

Q \_\_\_\_\_

(2)

(b) **Which** labelled structure is the effector in this response?

\_\_\_\_\_

(1)

(c) **What** is the function of a reflex action?

\_\_\_\_\_

\_\_\_\_\_

(1)

(d) The following stages occur in a reflex action.

1. The effector produces a response.
2. A sense organ is stimulated.
3. An impulse passes along a sensory neurone.
4. An impulse passes along a motor neurone.

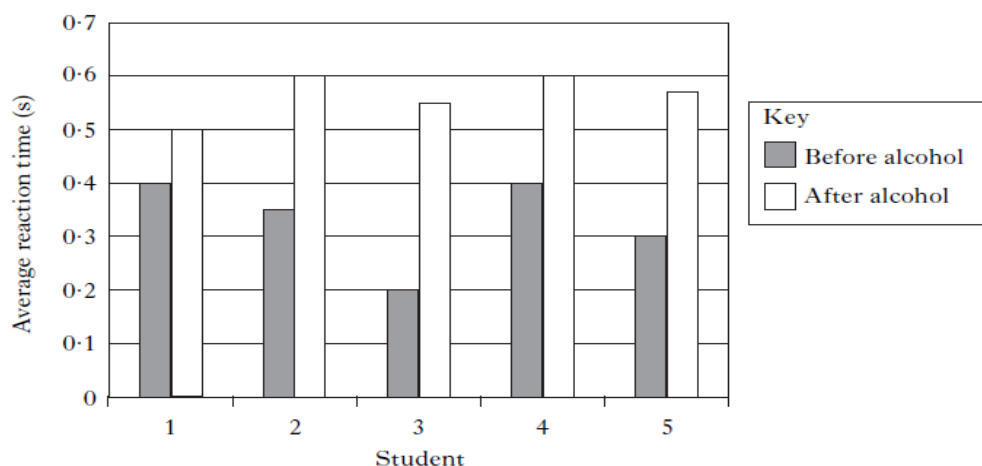
The correct order of the stages is \_\_\_\_\_

(1)

5. A scientist measured the reaction times of five students before and after drinking alcohol.

Average reaction times were calculated for each student.

The graph below shows their average reaction times before and after drinking alcohol.



(a) **What** conclusion can be drawn about the results?

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(1)

(b) **Why** did the scientist calculate the **average** reaction times?

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(1)

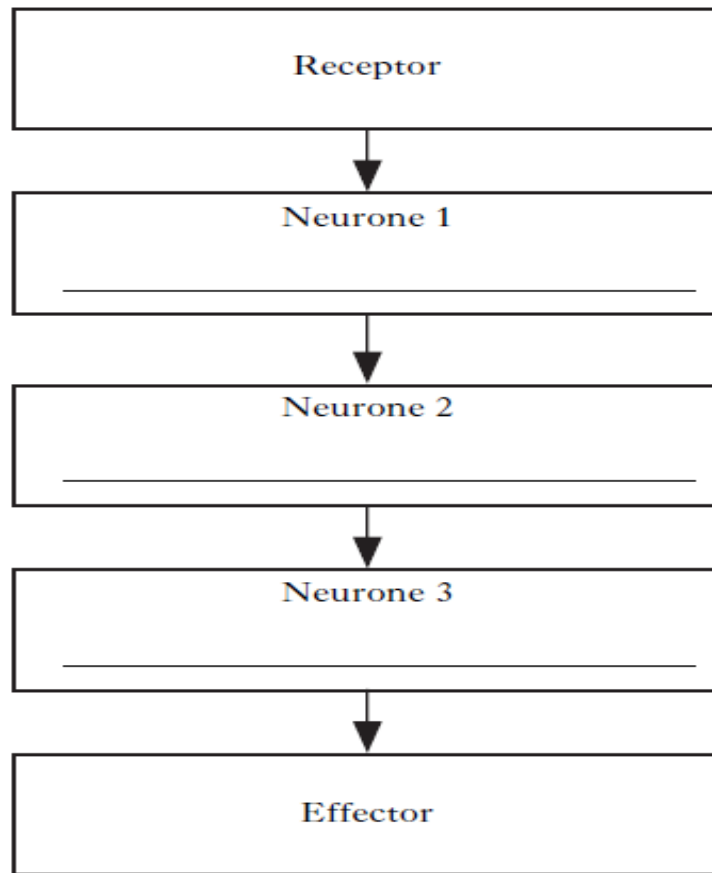
(c) What was the percentage increase in the average reaction time for student 4 after drinking alcohol?

*Space for calculation*

\_\_\_\_\_ %  
(1)

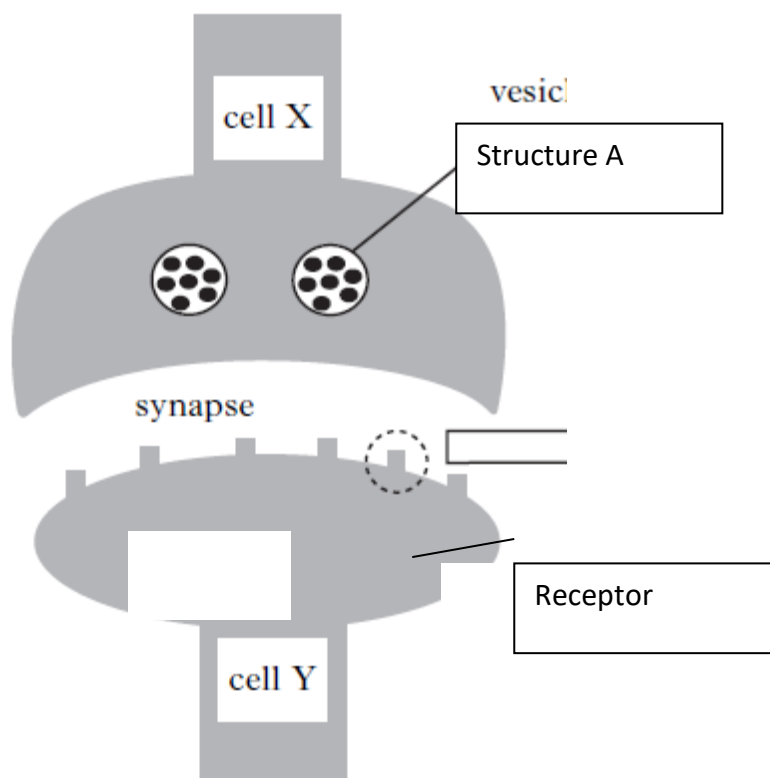
6. The flow chart below shows the structures in a reflex arc.

**Complete** the chart by inserting the names of missing neurones.



(2)

7. The diagram below shows two nerve cells in the brain.



(a) **What** name is given to the tiny space between cell X and cell Y?

\_\_\_\_\_ (1)

(b) (i) **What** does structure A contain that will be released across this space to the receptor on Cell Y to trigger an impulse?

\_\_\_\_\_ (1)

(ii) **What** process is responsible for the movement of the contents of structure A across the space?

\_\_\_\_\_ (1)

**Total** \_\_\_\_\_ **20**

## 5. Reproductive Systems

1. (a) **Complete** the table below to show how many sets of chromosomes would be found in each cell in the human body.

| Cell       | Number of sets of chromosomes |
|------------|-------------------------------|
| Skin cell  |                               |
| Liver cell |                               |
| Egg cell   |                               |

(2)

- (b) **What** term is used to describe a cell that has a double set of chromosomes?

\_\_\_\_\_

(1)

- (c) Sex cells are described as being 'haploid'. **Describe** what this means.

\_\_\_\_\_

\_\_\_\_\_

(1)

2. (a) **Complete** the table below to show the sex cells in animals and plants and their sites of production.

| Organism       | Sex cell | Male or Female | Site of production |
|----------------|----------|----------------|--------------------|
| <b>Animals</b> | Egg      |                |                    |
|                |          | Male           |                    |
| <b>Plants</b>  |          |                | Ovary              |
|                | Pollen   |                |                    |

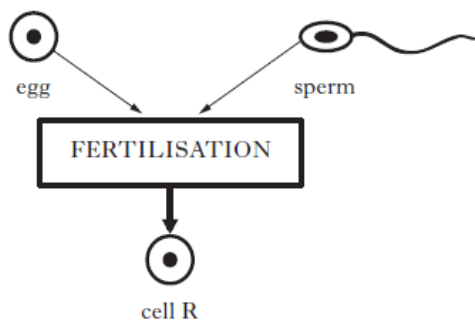
(4)

- (b) **What** term is used to describe sex cells in plants and animals?

\_\_\_\_\_

(1)

3. The diagram below shows the process of fertilisation.



Cell R is

- A a zygote
- B a gamete
- C an ovule
- D an embryo

**Correct answer** \_\_\_\_\_

(1)

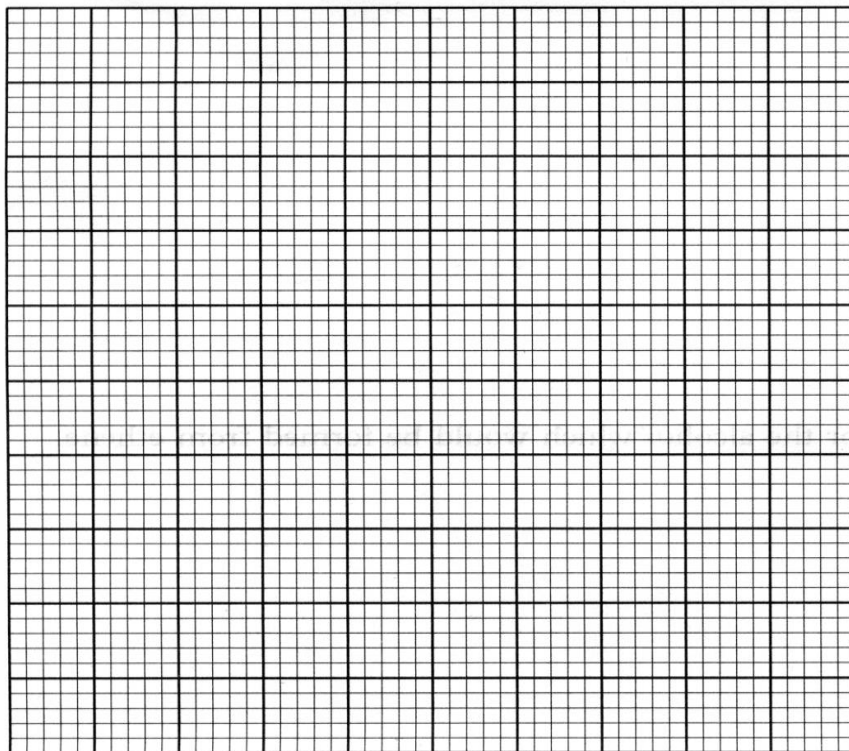
4. The table below shows information on the number of eggs fertilised and the survival of offspring for four different animals.

| <i>Animal</i> | <i>Average number of eggs fertilised at one time</i> | <i>Average number of surviving offspring</i> | <i>Percentage survival rate</i> |
|---------------|--|--|---------------------------------|
| Dog           | 5  | 4  |                                 |
| Human         | 1  | 1  | 100                             |
| Bird          | 4  | 3  | 75                              |
| Trout         | 1000   | 20   | 2                               |

(a) **Calculate** the percentage survival for the dog and complete the table with the result.

(1)

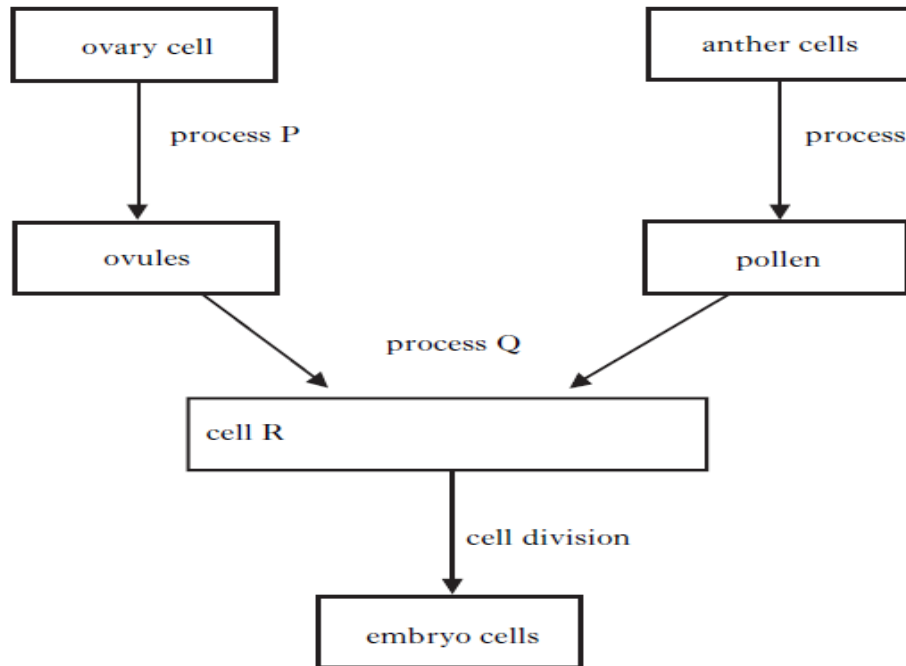
(b) **Draw** a bar graph to show the percentage survival rates of the 4 animals on the grid below.



(2)



5 (a) The diagram below shows a summary of events that occur during reproduction in a flowering plant.



(i) **Complete the diagram** by entering the name of cell type R. (1)

(ii) **Which** process in the diagram represents fertilisation?

\_\_\_\_\_ (1)

(iii) **Complete** the following table by inserting a tick (✓) in the correct boxes to show which of the cells in the diagram have a double or single set of chromosomes.

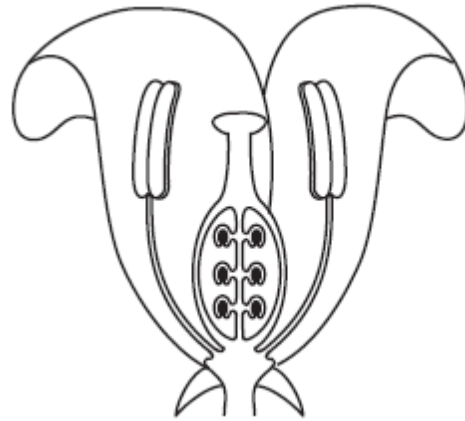
| <i>Cell</i> | <i>Double set of chromosomes</i> | <i>Single set of chromosomes</i> |
|-------------|----------------------------------|----------------------------------|
| anther      |                                  |                                  |
| ovule       |                                  |                                  |
| R           |                                  |                                  |
| embryo      |                                  |                                  |

(2)

(b) **Explain** the need to produce cells with a single set of chromosomes in reproduction.

\_\_\_\_\_  
 \_\_\_\_\_ (1)

6 The diagram below shows a section through a flower.



**Name** the sites of production of pollen grains and ovules in a flower.

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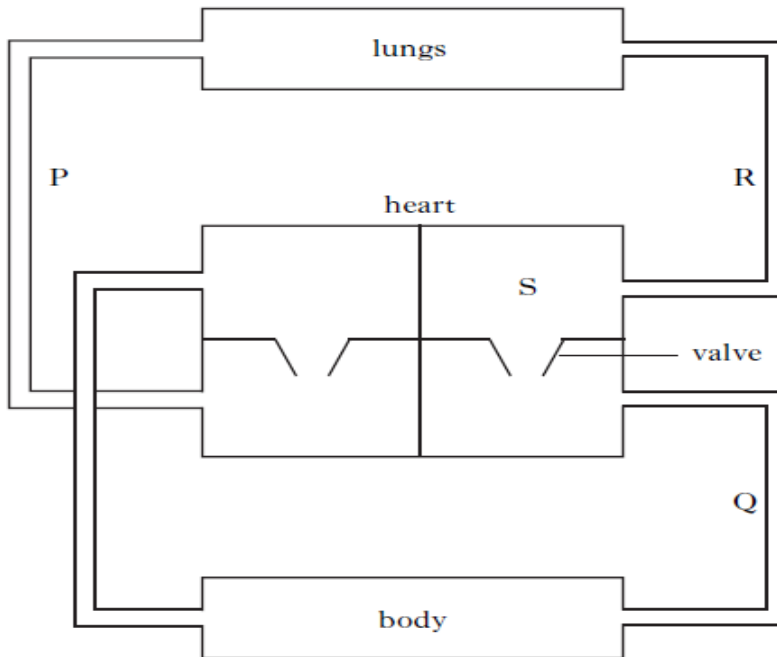
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(2)

**Total**      **20**

## 6. The circulatory system

1. The diagram below represents the human circulatory system.



(a) (i) **Draw** arrows at P and Q to show the direction of blood flow in these vessels. (1)

(ii) **State** whether the blood is oxygenated or deoxygenated in vessels P and Q.

P \_\_\_\_\_

Q \_\_\_\_\_

(1)

(b) **Name** heart chamber S and blood vessel R.

Heart chamber S \_\_\_\_\_ (1)

Blood vessel R \_\_\_\_\_ (1)

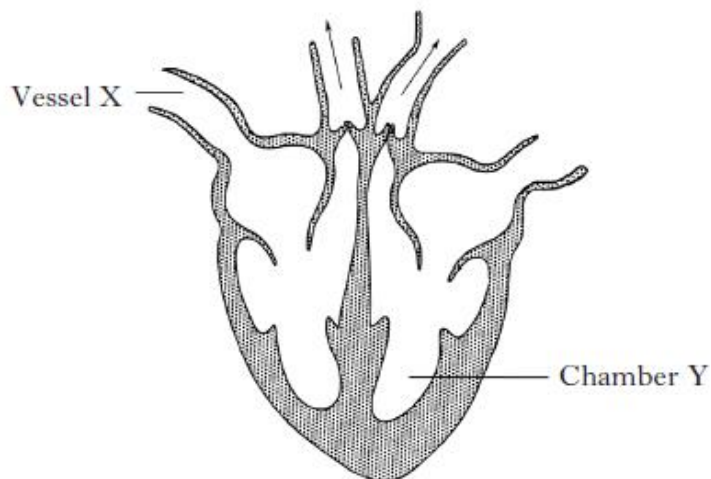
(c) **What** is the function of the heart valves?

\_\_\_\_\_ (1)

(d) **Explain** why a blocked coronary artery damages heart muscle.

\_\_\_\_\_  
\_\_\_\_\_ (1)

2. The diagram below shows a cross section of a human heart.

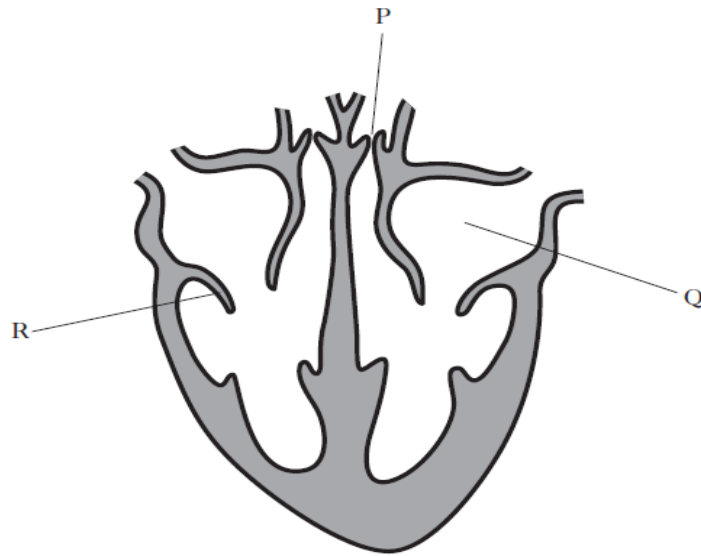


**Which** line in the table correctly identifies the parts of the heart correctly?

|   | <i>Vessel X</i> | <i>Chamber Y</i> |
|---|-----------------|------------------|
| A | aorta           | left ventricle   |
| B | vena cava       | left ventricle   |
| C | vena cava       | right ventricle  |
| D | aorta           | right ventricle  |

Correct answer \_\_\_\_\_ (1)

3. The following diagram shows the human heart.



(a) (i) **Name** chamber Q and **state** whether it is carrying oxygenated blood or deoxygenated blood.

Chamber Q \_\_\_\_\_ (1)

Oxygenated or deoxygenated blood \_\_\_\_\_ (1)

(b) **Name** the blood vessel that carries blood from the rest of the body back to the heart.

\_\_\_\_\_ (1)

4. (a) Decide if each of the following statements about blood vessels is True or False, and **tick** (✓) the appropriate box.

If the statement is **False**, write the correct word in the **Correction** box to replace the word(s) underlined in the statement.

| <i>Statement</i>                            | <i>True</i> | <i>False</i> | <i>Correction</i> |
|---|-------------|--------------|-------------------|
| <u>Capillaries</u> contain valves.          |             |              |                   |
| <u>Veins</u> allow gas exchange.            |             |              |                   |
| Blood leaves the heart in <u>arteries</u> . |             |              |                   |

(3)

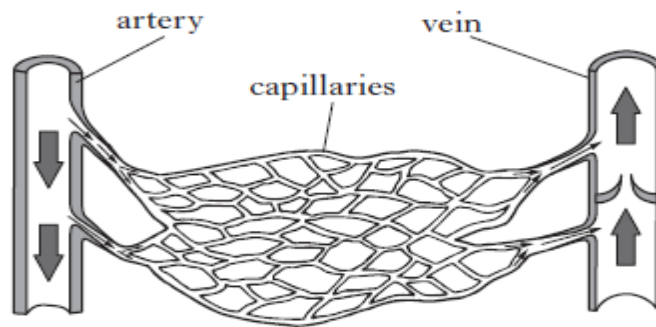
(b) The sentences below describe some of the functions of blood cells.

Underline one option in each set of brackets to make the sentences correct.

Oxygen is carried by  $\left[ \begin{array}{l} \text{red} \\ \text{white} \end{array} \right]$  cells.

It combines with haemoglobin to form oxyhaemoglobin at  $\left[ \begin{array}{l} \text{low} \\ \text{high} \end{array} \right]$  oxygen levels. (1)

6. The diagram shows three types of blood vessel in the human body.



(a) For each type of blood vessel, **describe** their **structure** and function.

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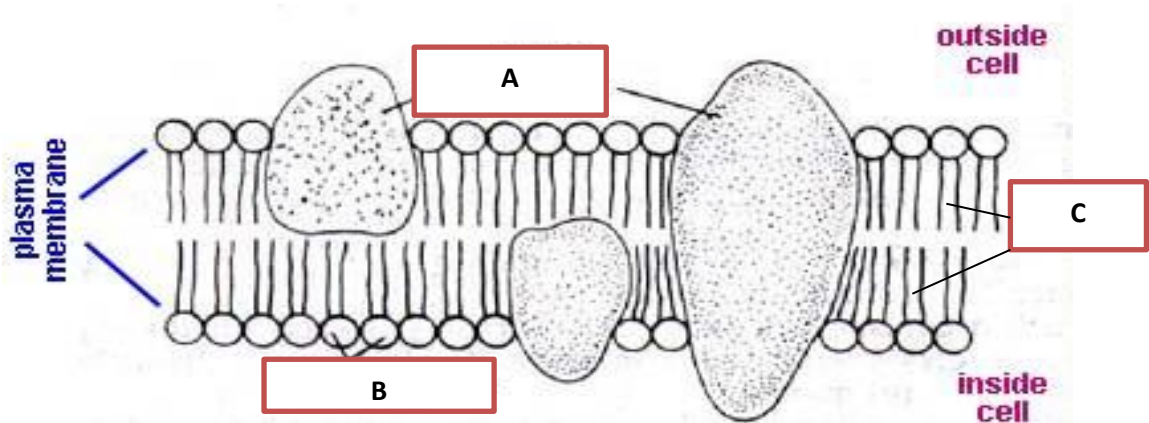
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(6)

Total 20

## 7. Transport across cell membranes

1. Identify the 3 parts labelled A, B and C in the cell membrane diagram. (3)



2. Explain **diffusion** using the following terms; high concentration, low concentration, concentration gradient, molecules and energy. (3)

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3. Osmosis is a special case of diffusion. What substance is transported by osmosis? (1)

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4. Some substances are unable to move across a cell membrane without using energy (ATP). What is this process called? (1)

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5. In the space below, **draw and state** the appearance of a plant cell which has been;

- i.) left in a strong salt solution
- ii.) left in a weak salt solution
- iii.) left in pure water (3)

7. Turnip discs (each weighing 2.00g) were placed in 3 different solutions for 24 hours and then reweighed. The results are shown in the table:

- (a) Copy and complete the table:  
(3)

| Solution | Final Mass (g) | Change in Mass (g) | % Change in Mass |
|----------|----------------|--------------------|------------------|
| Water    | 3.10           |                    |                  |
| 5% Salt  | 2.05           |                    |                  |
| 10% Salt | 1.40           |                    |                  |

- (b) Explain the change in mass for each turnip disc  
(3)

- (c) Which solution is closest to the concentration of salt in the turnip cells?  
(1)

- (d) How could the results be made more reliable?  
(1)

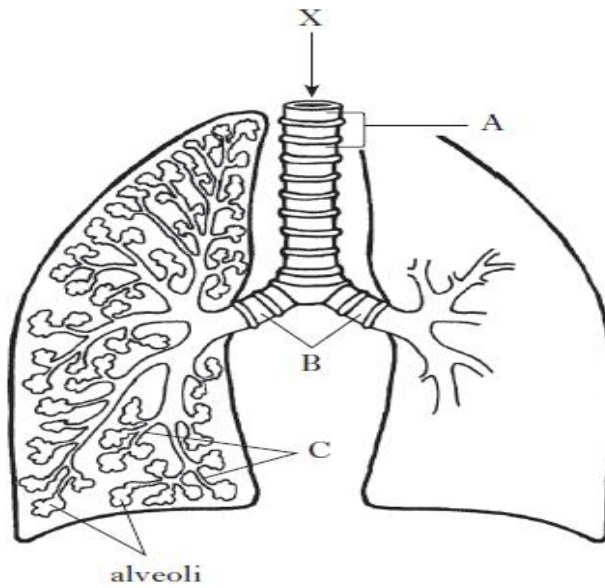
Total (19)

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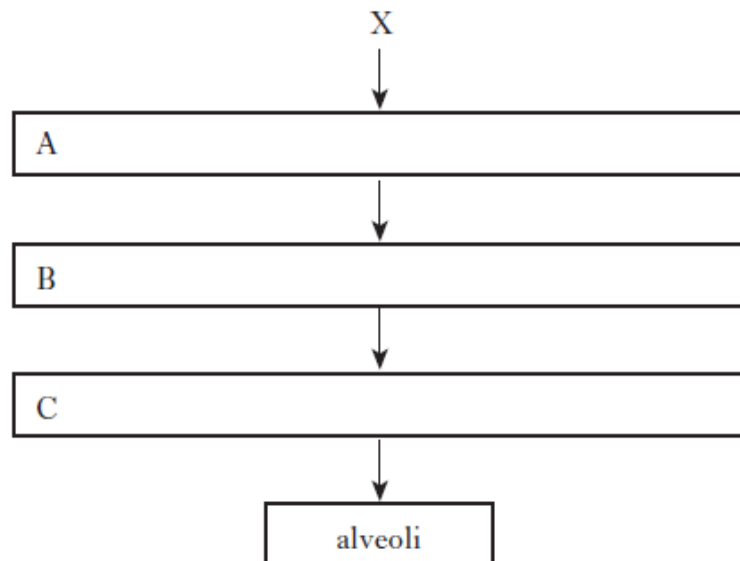


## 8.The respiratory system

1. The diagram below shows some structures of the human lungs.



(a) **Complete** the following flow chart to give the pathway of air from X to the alveoli by inserting the names of the structures labelled in the diagram.



(3)

(b) (i) **Name** the process by which oxygen moves from the lungs into the blood.

\_\_\_\_\_

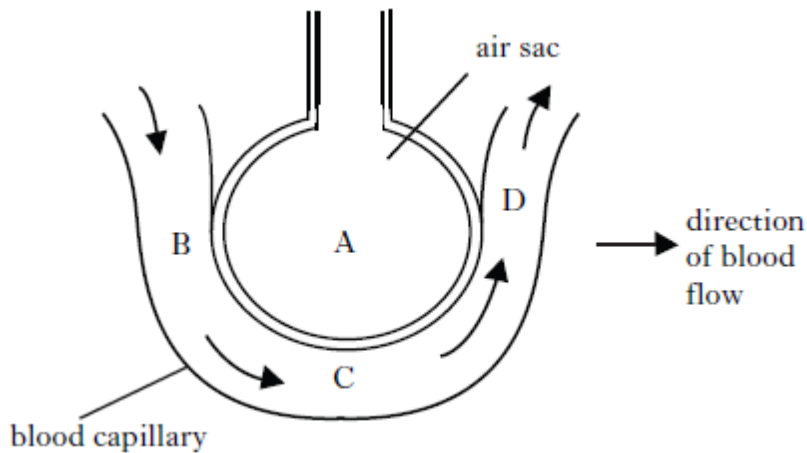
(1)

(ii) **State two** features of alveoli which allow efficient gas exchange.

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

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

2. The diagram below shows an air sac with part of its capillary network.



At **which** position would blood with the highest concentration of oxygen be found?

Correct answer \_\_\_\_\_ (1)

3.

(a) Decide if each of the following statements about gas exchange is **True** or **False**, and **tick** (✓) the appropriate box.

If the statement is **False**, write the correct word(s) in the **Correction** box to replace to word underlined in the statement.

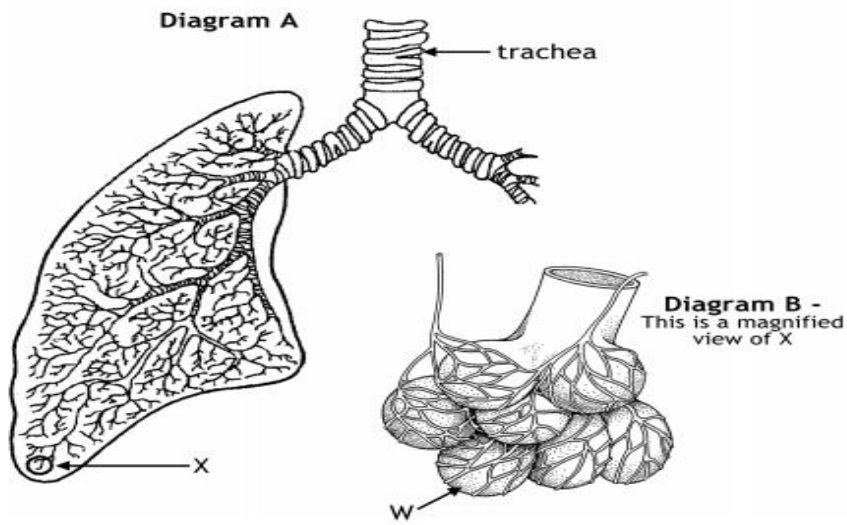
| Statement  | True | False | Correction |
|--|------|-------|------------|
| Lungs have a <u>large</u> surface area for efficient gas exchange.             |      |       |            |
| The thin walls of alveoli <u>slow down</u> gas exchange.                       |      |       |            |
| There is a lower <u>oxygen</u> concentration in the alveoli than in the blood. |      |       |            |

(3)

(b) **How** is oxygen carried in the red blood cells?

(1)

4.



(a) (i) Name the structure labelled W. 1

\_\_\_\_\_

(ii) Describe **two** features of these structures which improve the efficiency of gas exchange. 2

1 \_\_\_\_\_

2 \_\_\_\_\_

**Total** 14

## 9. Enzymes

1) What are enzymes an example of? (1)

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2) Describe the features of an enzyme which allow it to combine with only one substrate. (2)

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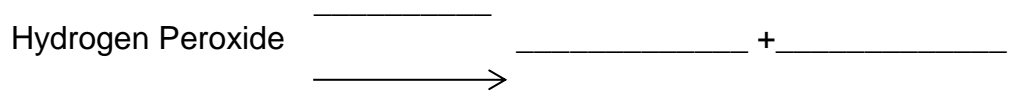
3) What happens to an enzymes active site if it is boiled? (1)

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4) Name another factor which can affect enzyme activity. (1)

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5) Complete the following word equation for the enzyme catalase. (1)

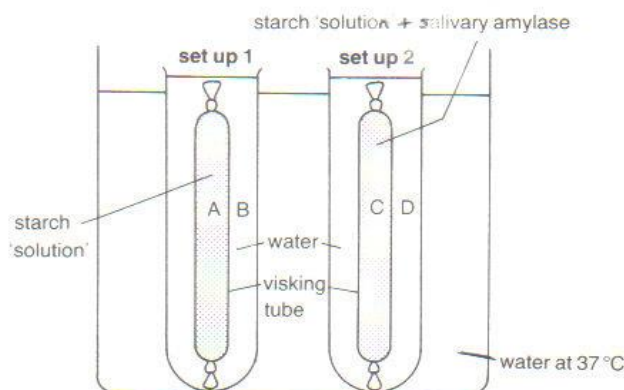


6. Two pieces of visking tubing containing 1% starch solution were placed into a waterbath to investigate the effect of amylase on starch.

(a) Write the word equation of the chemical reaction in set up 2 (1)

(b) Draw a diagram of this reaction to show the lock & key hypothesis (2)

(c) Salivary amylase is found in the mouth. Suggest the optimum pH (1)



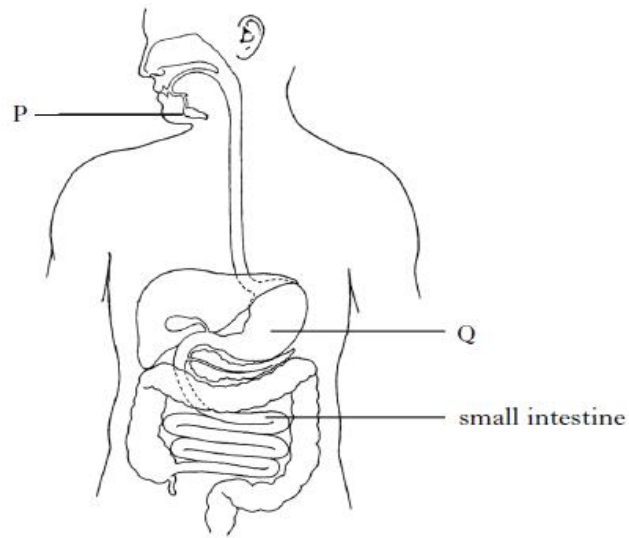
7. Match up the words in List X to their descriptions in List Y: (10)

| <u>List X:</u>       | <u>List Y:</u>  |
|----------------------|---|
| <i>substrate</i>     | <i>(A) Enzyme that catalyses breakdown of starch</i>                        |
| <i>amylase</i>       | <i>(B) Substance that speeds up chemical reaction without being used up</i> |
| <i>denatured</i>     | <i>(C) Biological catalyst made in cells</i>                                |
| <i>specific</i>      | <i>(D) Enzyme that catalyses breakdown of hydrogen peroxide</i>             |
| <i>synthesis</i>     | <i>(E) pH or temperature at which an enzyme works best</i>                  |
| <i>catalase</i>      | <i>(F) Reaction that involves small molecules forming larger ones</i>       |
| <i>enzyme</i>        | <i>(G) The molecule on which an enzyme acts</i>                             |
| <i>catalyst</i>      | <i>(H) Word used to explain that enzymes only catalyse one reaction</i>     |
| <i>phosphorylase</i> | <i>(I) Enzyme that catalyses build-up of starch in potatoes</i>             |
| <i>optimum</i>       | <i>(J) A change in enzyme structure which stops the enzyme working</i>      |

**Total 20**

## 10. The Digestive System

1. The diagram below shows the human digestive system.



(a) Name the parts labelled P and Q.

\_\_\_\_\_

\_\_\_\_\_

(2)

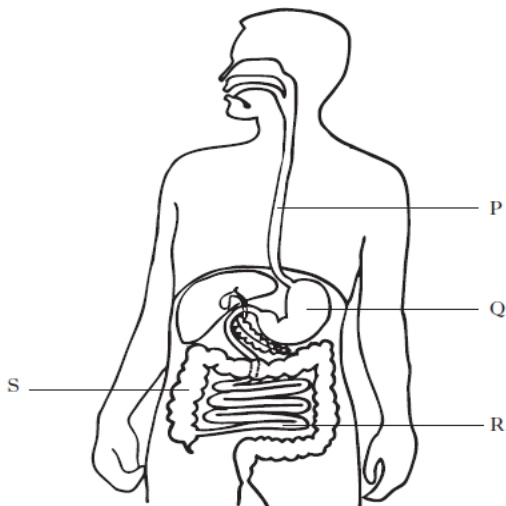
(b) **Give two** features of the small intestine which increases the rate of absorption.

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

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

(2)

2. The diagram below shows the human alimentary canal.



The absorption of nutrients takes place in

A P only

B P and R only

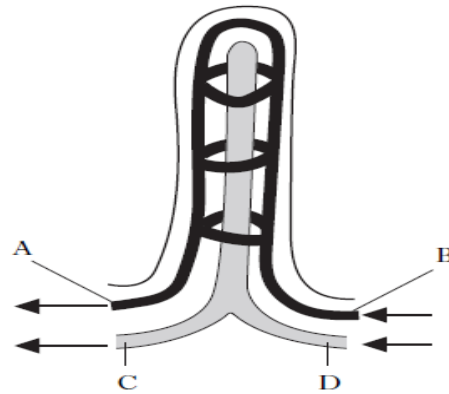
C P, R and S only

D P, Q, R and S

Correct answer \_\_\_\_\_

(1)

3. The diagram below represents a structure found in the small intestine.



(a) **What** is the name of this structure?

\_\_\_\_\_

(1)

(b) **Which** letter identifies the position of the fluid with the highest glucose content, after the absorption of digested food?

\_\_\_\_\_

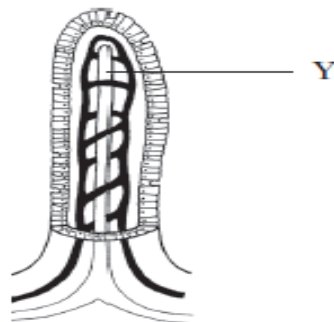
(1)

(c) **Which** letter identifies the position of the fluid with the highest fat content, after the absorption of digested food?

\_\_\_\_\_

(1)

4.



(a) **Which** food molecules are absorbed by structure Y?

- A Amino acids
- B Fatty acids
- C Glucose
- D Glycogen

(1)

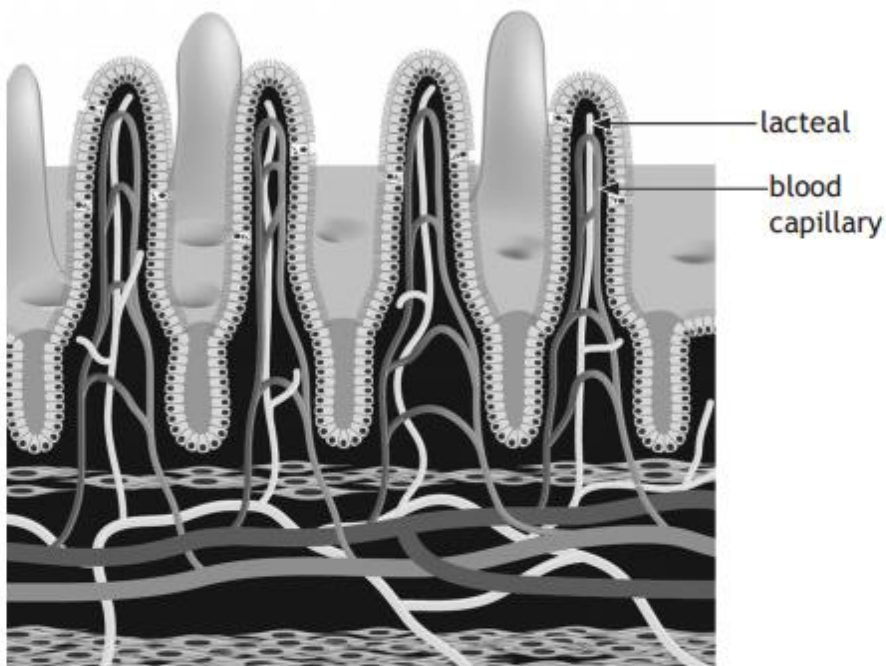
(b) Name structure Y.

\_\_\_\_\_

(1)

5.

The following diagram shows a cross-section of some villi in the small intestine.



Explain why the **structure and number** of villi make absorption an efficient process in the small intestine.

3

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6.

### Young at Heart?

New research shows that decades of hard-won progress in reducing the risk of heart disease in America appears to be losing pace. Recent death rates from heart disease remain almost unchanged in men and women under 55 years old.

This trend comes at a time when even young people are increasingly likely to be obese, suffer from diabetes and have high blood pressure. Each of these increases heart attack risk.

Data from 1980 to 2002 showed that the death rate from heart disease had fallen. In the whole population there was a yearly reduction of 2.9 percent during the 1980s, 2.6 percent during the 1990s and 4.4 percent from 2000 to 2002.

However the numbers told a strikingly different story for people aged 35 to 54. The yearly death rate from heart disease fell by 6.2 percent in the 1980s, by only 2.3 percent in the 1990s and showed no reduction at all between 2000 and 2002.

The message is that heart disease has not gone away, and could become an even greater problem if people fail to pay attention to known warning signs. Dr F S Ford, a medical officer for the American government said, "Young adults should take stock of their lifestyles. Don't smoke and take at least 30 minutes of exercise per day. If you need to lose weight, you must burn more energy than you take in. Good habits should start early. Changes that lead to heart disease, for example hardening of the arteries, occur at an early age. Therefore it is especially important that children and young people develop appropriate habits that minimise their risk of heart disease later in life."

(a) From the passage, **identify three** factors which contribute to the risk of heart disease.

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

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

3. \_\_\_\_\_

(2)

(b) **Complete** the table below to show the changes in death rates for the whole population and for the 35-54 age group.

|                  | <i>Average yearly reduction in death rate from heart disease (%)</i> |           |           |
|------------------|--|-----------|-----------|
|                  | 1980–1989  | 1990–1999 | 2000–2002 |
| Whole population |  |           |           |
| 35–54 age group  |  |           |           |

(2)

(c) According to Dr. Ford, **why** is it important that “good habits should start early”?

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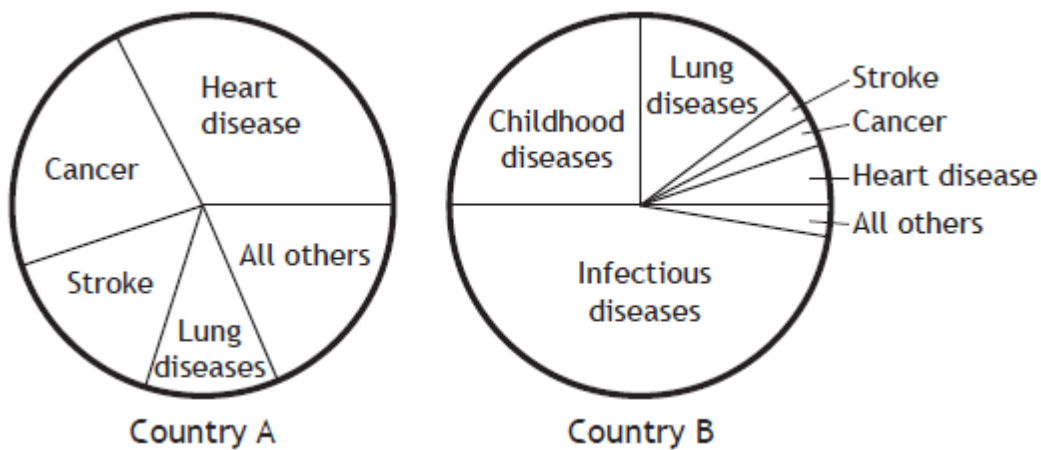
(1)

(d) **What** cellular process is being referred to in the phrase “you must burn more energy”?

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(1)

7. The diagrams below contain information about the causes of death in two countries in 2010.



(a) A student compared the data for heart disease for countries A and B and concluded that country B has a healthier lifestyle.

**Explain** why this conclusion is incorrect.

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(1)

## 11. Transport Systems in plants

1. Give an example of an organ found in plants? (1)
2. There are four major groups of plants. Features used to identify members of each group include the presence of a transport system, the shape of their leaves and their method of reproduction. Flowering plants and the conifers reproduce using seeds. They both have transport systems but they differ in the shape of their leaves. Conifers have needle-like leaves whereas the leaves of flowering plants are either narrow or broad. Mosses don't have any true leaves or transport systems. Ferns have transport systems and feathery leaves but they reproduce using spores, as do the mosses.

(a) Use the information above to complete the table about the plant groups.

| <i>Plant group</i> | <i>Transport system</i> | <i>Leaves</i>   | <i>Structures used in reproduction</i> |
|--------------------|-------------------------|-----------------|--|
|                    | absent                  | no true leaves  |  |
| Ferns              |                         |                 | spores                                 |
| Conifers           |                         |                 | seeds                                  |
|                    | present                 | narrow or broad |  |

(3)

(b) One type of transport system in plants carries water from the roots to the leaves.

(i) **Name** the type of tissue involved in this transport system.

\_\_\_\_\_

(1)

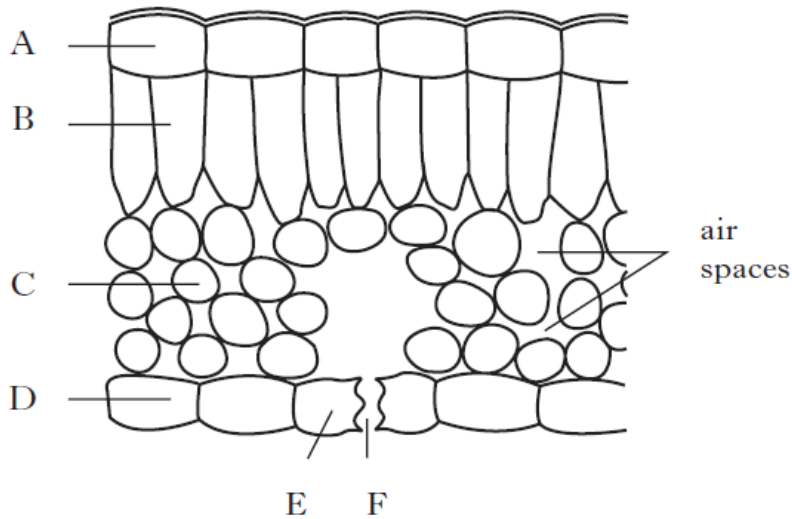
(ii) Apart from transporting water, **state one** other function of this tissue.

\_\_\_\_\_ (1)

(iii) **Describe** a function of a **different** transport tissue in plants.

\_\_\_\_\_ (1)

2. The diagram represents part of a cross section through a leaf.



(a) **Identify one** example of each of the cells described below by using letters from the diagram to complete the boxes.

Each letter may be used **once, more than once** or **not at all**.

Transparent cells

Cells which carry out photosynthesis

Mesophyll cells

Guard cells

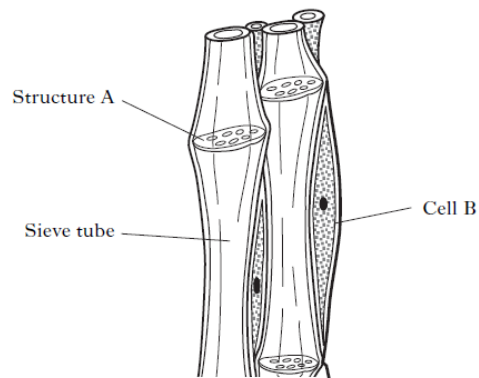
(2)

(b) **Complete** the sentences below by underlining the correct word in each set of brackets to make the sentences correct.

When water enters the guard cells they become  $\left[ \begin{array}{l} \text{flaccid} \\ \text{turgid} \end{array} \right]$ .

This change brings about the  $\left[ \begin{array}{l} \text{opening} \\ \text{closing} \end{array} \right]$  of stomata . **(1)**

3. (a) The diagram represents phloem tissue from the stem of a plant.



(i) **Name** Structure A and Cell B.

Structure A \_\_\_\_\_

Cell B \_\_\_\_\_

**(2)**

(ii) **State** the function of phloem.

\_\_\_\_\_ **(1)**

(b) **Name** the leaf tissue where stomata are found.

\_\_\_\_\_

**(1)**

(c) **Name** the cells which control the opening and closing of stomata.

\_\_\_\_\_

**(1)**

(d) Xylem tissue, like phloem tissue, is involved in transporting substances in plants.

(i) **Describe one** difference between xylem and phloem.

\_\_\_\_\_

\_\_\_\_\_

**(1)**

(ii) **Name** the substance used to strengthen xylem vessels.

\_\_\_\_\_

**(1)**

4. Water evaporates from the leaves of plants, mainly through the stomata.

This process is known as transpiration.

(a) **Complete** the sentences below to show how environmental factors can influence the rate at which this process occurs.

As temperature increases, transpiration rate \_\_\_\_\_

As wind speed increases, transpiration rate \_\_\_\_\_

As humidity increases, transpiration rate \_\_\_\_\_ **(2)**

(b) **Describe** the importance of water to plants.

\_\_\_\_\_

\_\_\_\_\_ **(1)**

**Total 20**