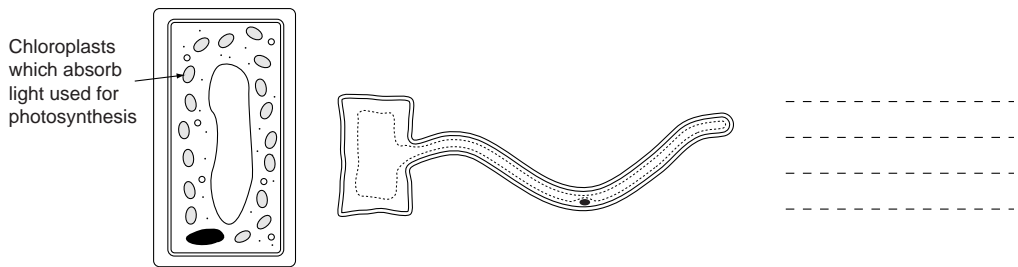


c Join together the parts of the cells and their correct functions using a ruled line:

Part of cell	•	•	Function
Chloroplasts	•	•	Where chemical reactions take place
Nucleus	•	•	Controls what enters and leaves the cell
Cell membrane	•	•	Absorbs light for photosynthesis
Cytoplasm	•	•	Keeps the shape of a plant cell
Cell wall	•	•	Controls the cell's activities (5)

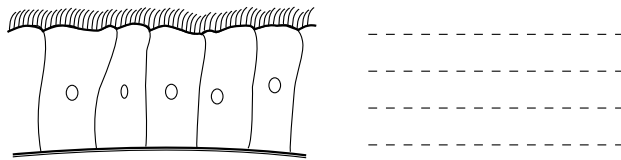
3 Cells become specialised to perform a particular function. For each cell below label a part which allows it to perform its function well and also describe the function it performs.



Palisade cell

Root hair cell

(2)



Ciliated epithelium

(2)

4 Why do root hair cells not have chloroplasts?

..... (1)

5 Euglena is a single celled organism. It lives in pond water. Euglena makes a sugar called glucose.

a Give the name of the process in which Euglena makes glucose.

..... (1)

b Euglena produces starch grains from glucose. Explain what will happen to the number of starch grains in the cell if Euglena is kept in the dark.

.....

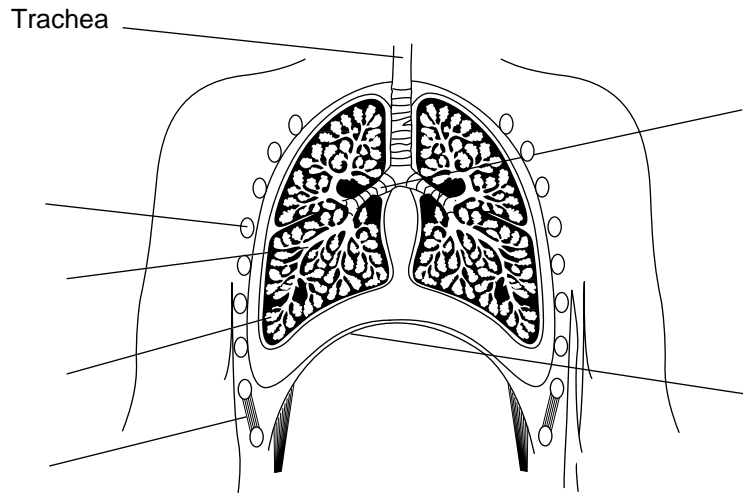
..... (2)

Total marks = 30

Humans as organisms – 8: Breathing

1 Our breathing system allows us to move air in and out of our lungs.

a On the diagram of the thorax or chest below write the correct label by each labelling line. One has been done for you: (6)



b Match up the parts of the breathing system with their correct function by writing the correct letter next to the functions listed below. Each may be used once, more than once or not at all. The first one has been done for you. (9)

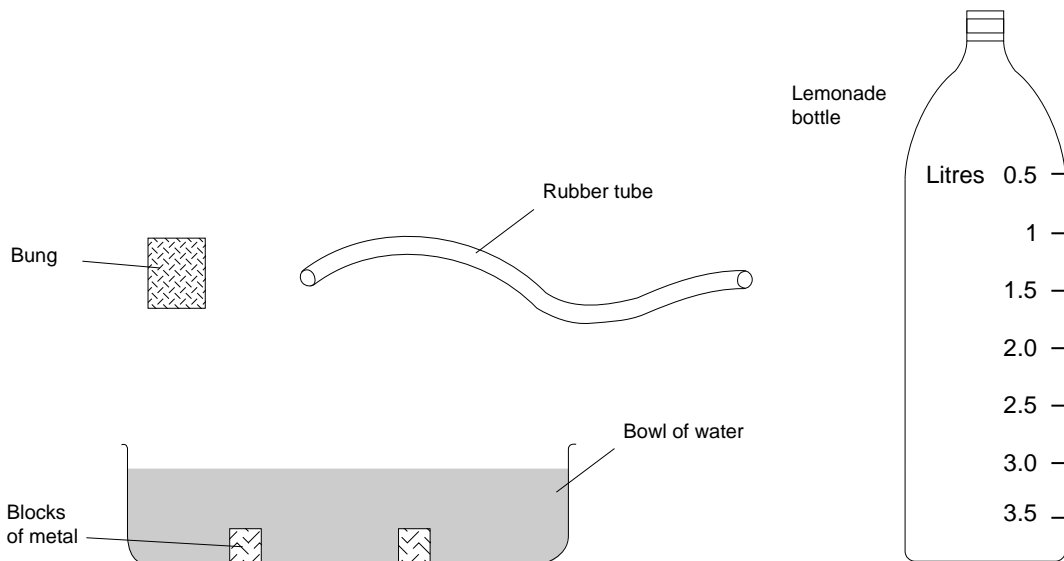
- | | | |
|-----------------------------|----------------|-------------|
| A – trachea | B – diaphragm | C – bronchi |
| D – alveoli | E – bronchiole | F – ribs |
| G – rib/intercostal muscles | H – epiglottis | I – nose |

- i Protects the lungs and heart F
- ii Move the ribs during breathing
- iii Separates the thorax and abdomen
- iv Where gas exchange takes place
- v Prevents food from entering the trachea
- vi Warms, moistens and cleans the air we breathe in
- vii Moves up and down during breathing
- viii Strengthened with rings of cartilage to keep it open
- ix Carries air into the right and left lung
- x Provides a large surface area for gas exchange

2 The following statements are about the path of the air we breathe in. Put them in the correct order by writing 1 next to what happens first, 2 next to what happens next, and so on. One has been done for you. (6)

- i Oxygen passes into the blood by diffusion.....
- ii Air enters through the nose 1
- iii The air then passes into two bronchi
- iv Warmed air passes into the trachea
- v These provide a large surface area for gas exchange.....
- vi These divide up to form smaller bronchioles
- vii The air then reaches the alveoli.....

3a Using the apparatus shown in the diagram, describe how it could be used to find out how much air a person can breathe out in one breath. (2)



.....

.....

.....

.....

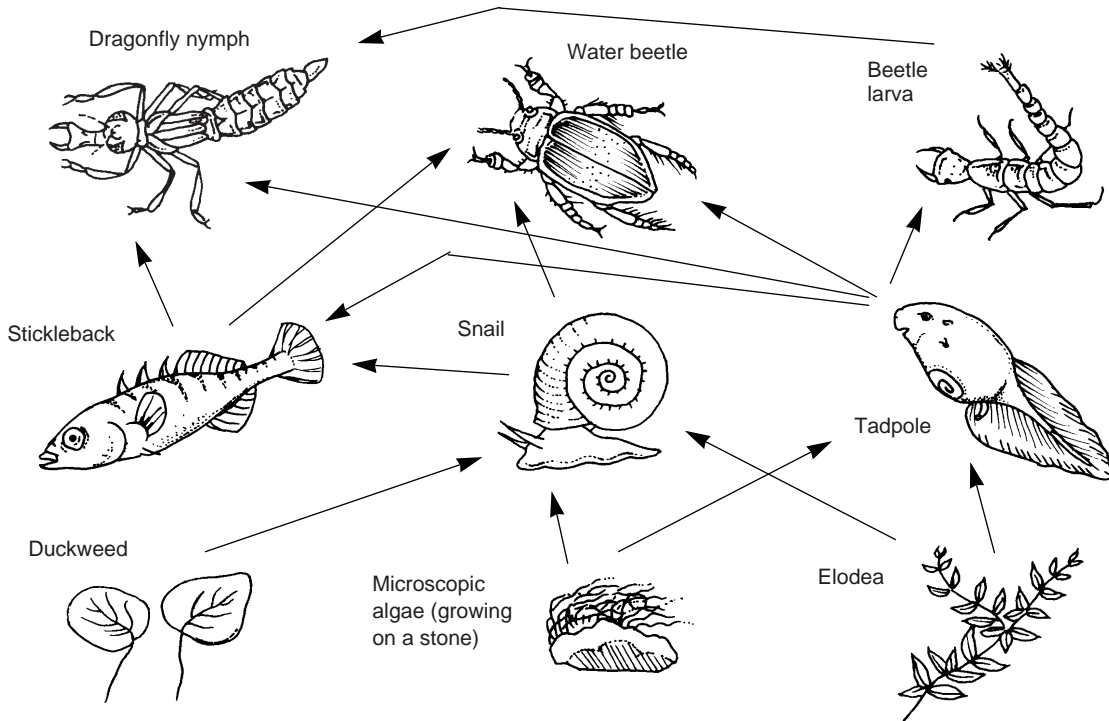
b If you wanted to use this apparatus to compare the amount of air breathed out by different people, you would have to make it a fair test. Give two things which you would have to do to make sure that it was a fair test. (2)

.....

.....

Total marks = 25

Living things in their environment – 5: Pyramids and energy loss



1a Give **one** factor which would increase the number of water beetles?
 (1)

b If the number of sticklebacks decreased, name one animal which would be affected. Explain why.

 (2)

c If the number of dragonfly nymphs increased, explain what would happen to the numbers of snails.
 (2)

2 The transfer of energy in a food chain is not efficient. This means that a lot of energy is **not** passed onto to the next organism.

Grass → Rabbit → Fox

a Which **process** transfers energy from the sun to the producer?
 (1)

b Which **process** transfers energy from one organism to the next organism in the food chain?
 (1)

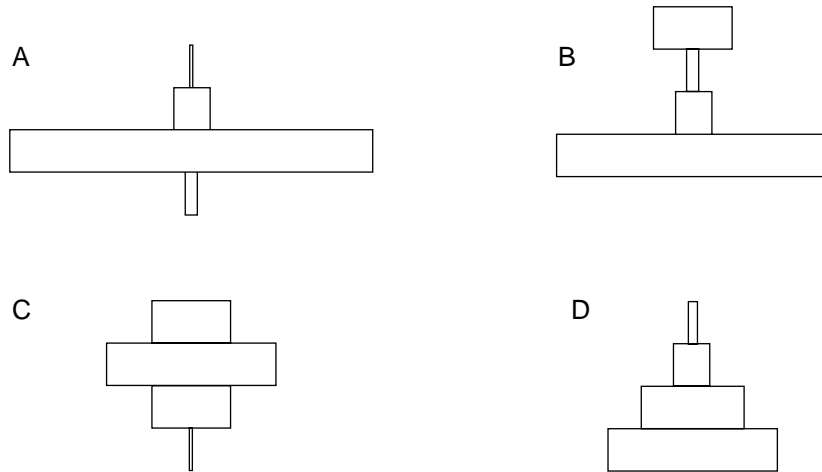
c What is the name of the **process** which transfers energy to the surroundings as heat?

..... (1)

d Apart from loss of energy as heat, give **two other** reasons why all the energy in a rabbit is not passed onto a fox, which eats it.

.....
 (2)

3 Pyramids of numbers show the number of organisms at each stage in a food chain. A, B, C and D are four pyramids of numbers.



a For each of the food chains choose the pyramid of numbers which would represent it best: (6)

- i rose bush → greenfly → blue tit → owl
- ii grass → rabbits → stoat → fleas
- iii algae → water fleas → minnows → perch
- iv water lily → snail → stickleback → kingfisher
- v pond weed → snail → stickleback → dragonfly nymph
- vi dead leaves → worms → frog → badger

b Look at the last food chain. If all the frogs died, what would happen to the **numbers** of worms and badgers in the habitat? Explain why.

Worms

..... (2)

Badgers

..... (2)

Total marks = 20