1 Most cars burn fossil fuels to release energy for their movement.

Which characteristic of living organisms is similar to this?

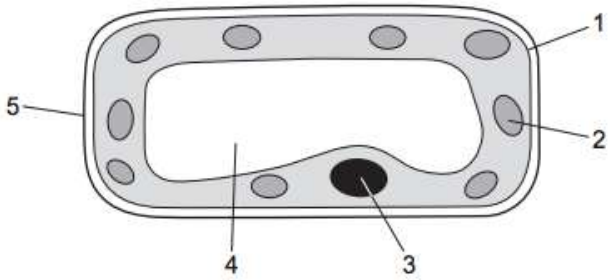
A excretion

B growth

C nutrition

D respiration

2 The diagram shows a plant cell with some structures labelled.



Which two structures are also present in animal cells?

A 1 and 2 **B** 1 and 3 **C** 2 and 4 **D** 3 and 5

3 Food chewed in the mouth is mixed with enzymes which begin the process of chemical digestion.

What type of molecule is an enzyme?

A carbohydrate

B fat

C protein

D vitamin

4 Which two chemical substances are required for photosynthesis?

A carbon dioxide and glucose

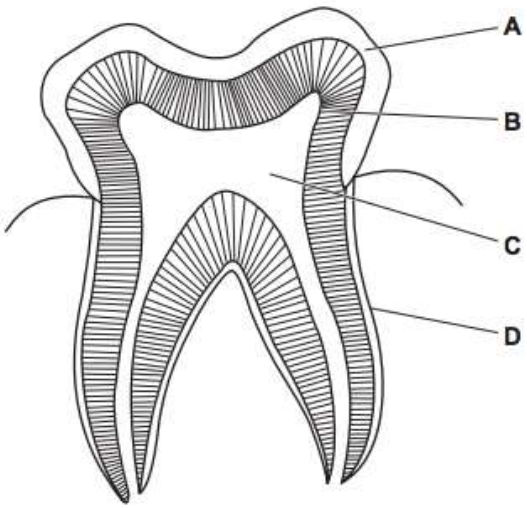
B glucose and oxygen

C oxygen and water

D water and carbon dioxide

5 The diagram shows a section through a human tooth.

Which part is made of the hardest material?



----------END OF PAPER----------

1 Most cars burn fossil fuels to release energy for their movement.

Which characteristic of living organisms is similar to this?

A excretion

B growth

C nutrition

D respiration

2 Which structure controls the passage of substances into and out of a cell?

A cell membrane

B cell wall

C nucleus

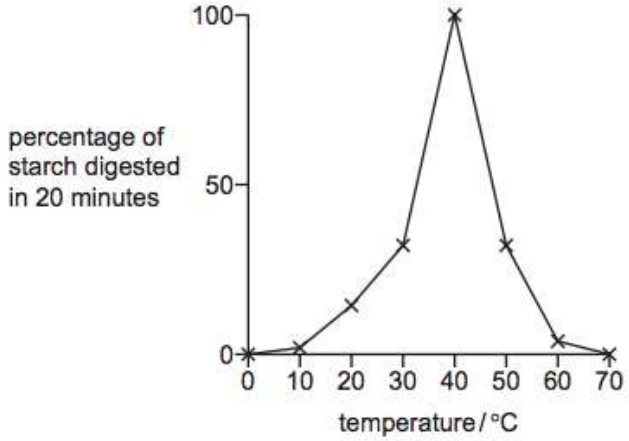
D vacuole

3 Amylase is an enzyme that digests starch.

Identical mixtures of starch and amylase are kept at different temperatures.

The percentage of starch digested in 20 minutes is recorded.

The results are shown in the graph.



The mixtures that were kept at 0 °C and 70 °C are then kept at a temperature of 40 °C for one hour.

What are the results after this hour?

	percentage of starch digested	
	sample originally kept at 0 °C	sample originally kept at 70 °C
A	0	0
B	0	100
C	100	0
D	100	100

4 Which two chemical substances are required for photosynthesis?

A carbon dioxide and glucose

B glucose and oxygen

C oxygen and water

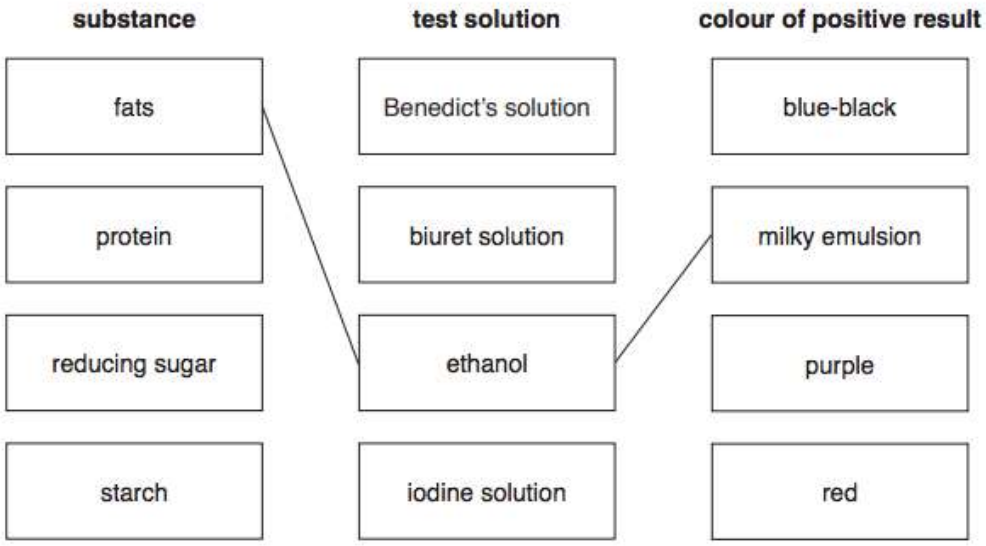
D water and carbon dioxide

----------END OF PAPER----------

1 **(a)** Substances in food can be identified using test solutions.

Use lines to join each substance with the correct test solution and the colour of its positive result.

One example is done for you.



[3]

(b) Fig. 1.1 shows three leaves, **P**, **Q** and **R**.

The leaves are of similar size. They are all taken from the same type of plant on a sunny day.

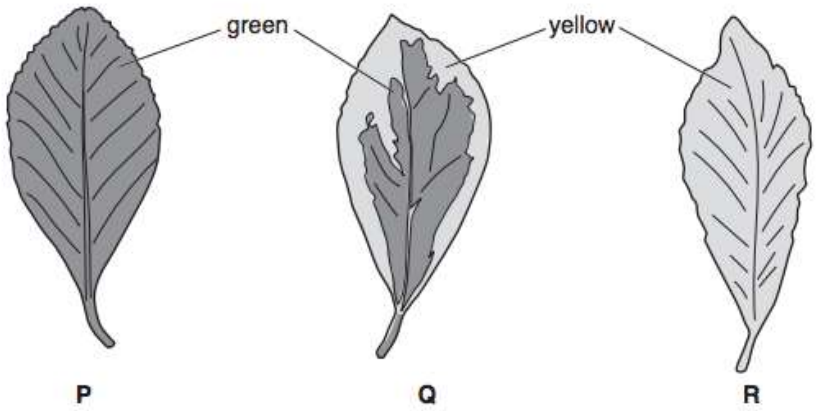


Fig. 1.1

(i) The leaves in Fig. 1.1 are all tested for the presence of starch. **P**, **Q** and **R** are found to contain different amounts of starch.

Use Fig. 1.1 to place the leaves **P**, **Q** and **R** in order of the amount of starch they contain.

..... highest amount of starch

.....

.....

..... lowest amount of starch [1]

(ii) Explain your answer to **(i)**.

.....

.....

.....[2]

2 **(a)** A student investigates the reactivity of four different metals.

She places pieces of calcium, copper, iron and zinc separately in dilute hydrochloric acid, as shown in Fig. 2.1.

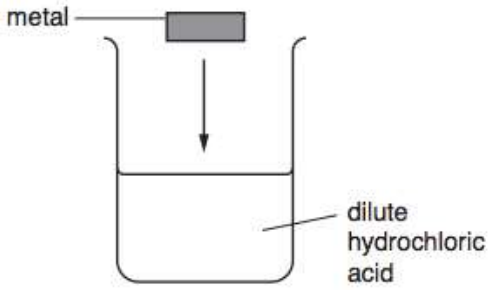


Fig. 2.1

(i) Place these four metals in order of reactivity, from most to least reactive.

..... most reactive

.....

.....

..... least reactive

[2]

(ii) Suggest what happens to the pH number of the acid when it reacts with a piece of metal.

.....[1]

3 Fig. 3.1 shows an airship carrying a heavy load.

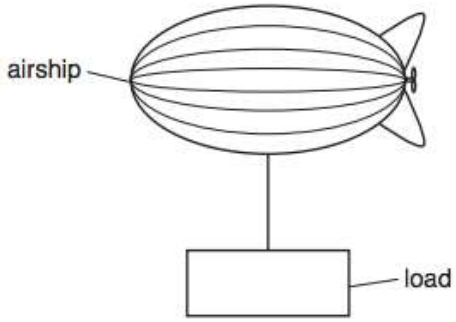


Fig. 3.1

(a) The airship and load are floating above the ground.

(i) On Fig. 3.1 draw **two** force arrows to show the vertical forces acting on the load. [2]

(ii) At one point in its journey, the airship is moving and all the forces acting on the airship are balanced.

Describe the motion of the airship at this time.

.....

.....[1]

(iii) Name the unit of force.

.....[1]

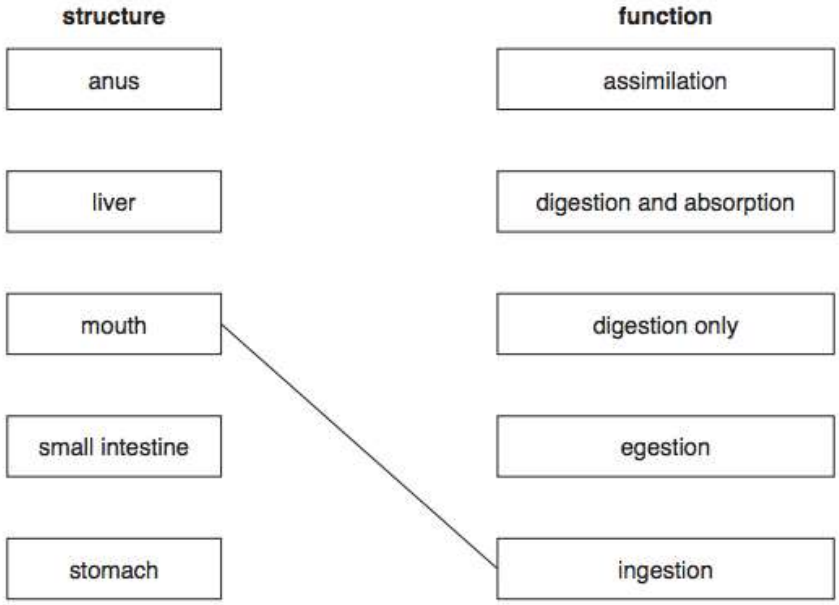
----------END OF PAPER----------

COMBINED SCIENCE **0653/33**

Paper 3 (Core) **May/June 2018**

1 **(a)** The boxes on the left show some structures of the alimentary canal and associated organs. The boxes on the right show their functions.

Draw **one** line from each structure on the left to its correct function on the right. One line has been done for you.



[3]

(b) Large pieces of food are broken down by the action of teeth. It is important that teeth are cared for so that they do not decay.

The composition of 100 cm^3 of a soft drink is shown in Table 1.1.

Table 1.1

substance	mass/g
fat	0
carbohydrate as sugar	9.9
fibre	0
protein	0.1

Use the information in Table 1.1 to explain in detail why the soft drink is harmful for teeth.

.....

.....

.....

.....[3]

2 A student investigates the combustion of a hydrocarbon, as shown in Fig. 2.1.

Gases move through the apparatus in the direction shown by the arrows.

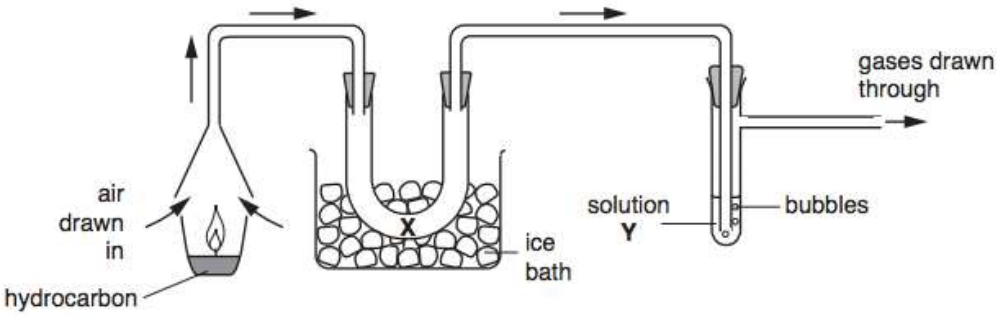


Fig. 2.1

(a) The student thinks that carbon dioxide and water are formed when the hydrocarbon burns.

(i) Suggest a chemical that the student uses at position **X** to test for the presence of water.

.....[1]

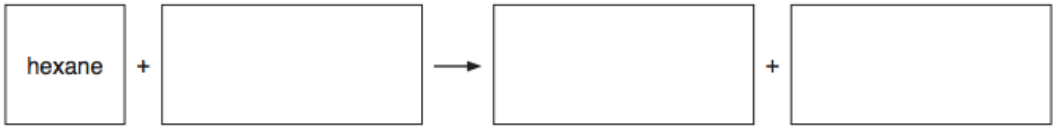
(ii) The student uses solution **Y** to test for carbon dioxide.

Identify solution **Y**.

.....[1]

(b) Hexane is a hydrocarbon. The products of the complete combustion of hexane are carbon dioxide and water.

Complete the word equation for this reaction.



[2]

(c) Name the hydrocarbon that is the main constituent of natural gas.

.....[1]

(d) **(i)** Carbon and hydrogen are non-metallic elements.

State the type of bond that forms between atoms of these two elements.

.....[1]

(ii) Draw the structure of a molecule of ethane, C_2H_6.

3 Fig. 3.1 shows a crane carrying a load.

The crane is floating in the sea on a calm day.

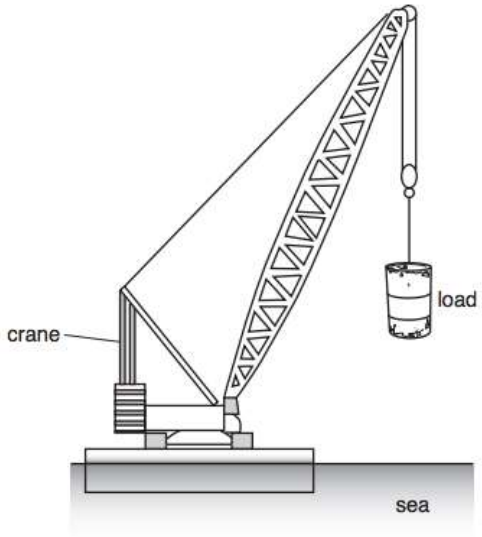


Fig. 3.1

(a) (i) The load is stationary.

On Fig. 3.1 draw two force arrows to show the vertical forces acting on the load. [2]

(ii) One of the forces acting on the load is called *tension*.

Name the other force acting on the load.

.....[1]