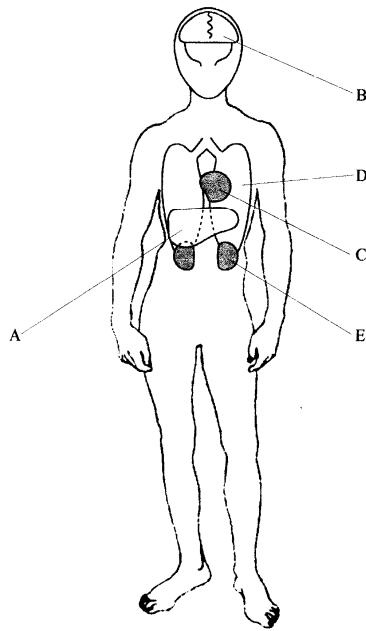# 13+ SCIENCE PAPER
- SAMPLE -

Time Allowed: **1 HOUR**

Special Instructions: **Attempt all questions.**
For any calculations, show your working out and always show the units of measurement being used.

Marks allocated for each question or part question are shown in brackets.

Name:	
Result:	
Comment:	

1. The diagrams show some organs in the human body.

(a)   Name the organs labelled A, B, C, D and E

A. ....[1]

B. ....[1]

C. ....[1]

D. ....[1]

E. ....[1]

(b)   Which of the organs A, B, C, D or E

 (i) produces urine? ☐   [1]

 (ii) pumps blood around the body ☐   [1]

 (iv) absorbs oxygen from the air? ☐   [1]

Total / 8

2. All living things carry out certain life processes.

   a) Name the life process given in the following definitions

(i)   the release of energy from food.

....[1]

(ii) the ability to react to the surroundings.

....[1]

(iii) the release of waste products.

....[1]

(iv) the production of offspring.

....[1]

(b)   To stay alive both plants and animals need a source of food.

   (i) How do animals obtain food?

....[1]

   (ii) How do green plants obtain food?

....

....[2]
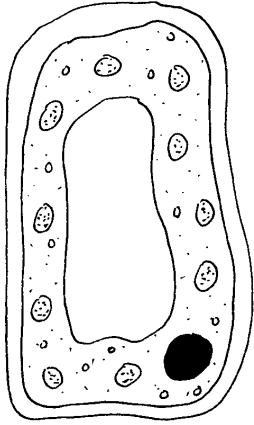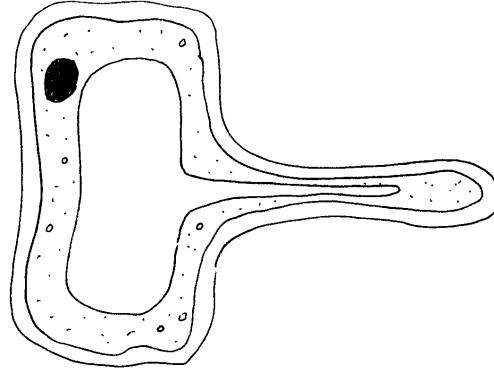
Total / 7

3. The diagrams show two types of plant cell A and B.

A   B

(a) Which cell is found in:

(i)   the leaf? ☐

(ii) the root ☐   [2]

(b) Name three structures found in both types of cell.

1..

2..

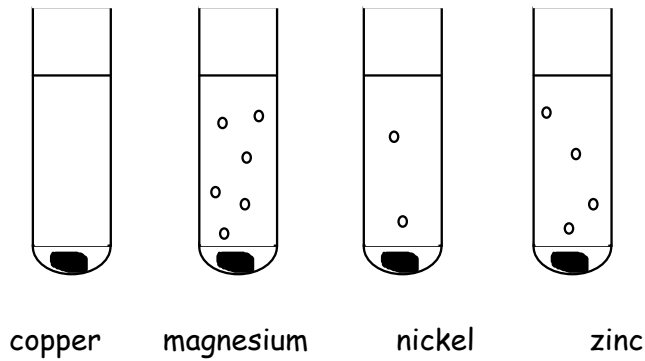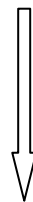3..[3]

Total / 5

4. Small pieces of the metals copper, magnesium, nickel and zinc were placed in test tubes containing small quantities of hydrochloric acid. The following results were observed.

copper   magnesium   nickel   zinc

(a)   Use the observations from above to complete the following reactivity series.

1. ....most reactive

2. ....

3. ....

4. ....least reactive

[2]

(b)   (i)   What is the name of the gas produced in the above reactions?

.... [1]

   (ii)   Describe the test and result you would use to identify this gas.

....

.... [2]

Total / 5

5. The fire triangle gives information about the conditions necessary for burning.
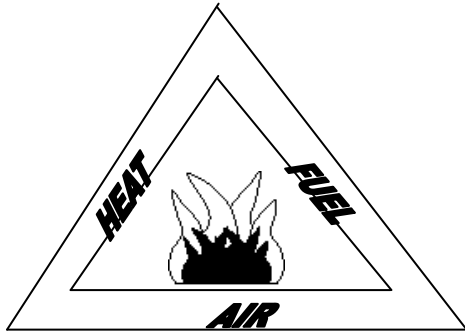
(a)   Explain what the fire triangle tells you.

    ....

    ....[1]

(b) For each of the following types of fire, state how it is extinguished and what part of the fire triangle is removed when this is done.

(c)

(i)   a person's clothes

    method ....

    removed ....[2]

        ....

(ii)   a forest fire

    method ....

    removed ....[2]

(iii)   a bonfire

    method ....

    removed ....[2]

Total / 7

6. The pH of soil is very important in deciding which crops grow best.
   The table below shows the pH ranges which are best for some plants.

Plant	pH range
beans	6.0 to 7.5
potato	5.0 to 6.5
onion	6.0 to 7.0
leek	6.0 to 8.0

The soil in three fields was tested.
The results are shown below.

field	pH of soil
A	6.6
B	7.3
C	5.5

(a) In which field is the soil most acidic?   [1]

(b) Which crops would grow best in field A?

....

....

.... [3]

(c) Lime can be added to raise the pH of the soil.
    Which field would need lime before you could grow leeks in it?

.... [1]

(d) Explain how you would find the pH of a soil sample.

....

....

.... [3]

Total / 8

7. A kitchen is a room full of energy changers, most of which are powered by electrical energy.

   (a) Complete the changes for the following pieces of equipment.

     Cooker: electrical → _____ and _____   [2]

     Mobile phone: _____ → electrical → _____   [2]

     Clock: electrical → _____ and _____   [2]

     Light bulb: electrical → _____ and _____   [2]
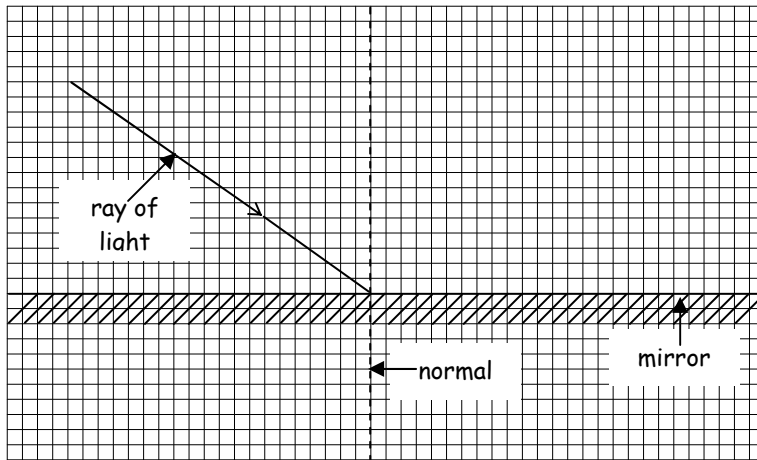
(b)   Complete the following sentences:

  (i) One joule of work is done when a force of one _____

    moves a distance of one _____.   [2]

  (iii) The principle of _____ of energy says that energy

    can be _____ from one form to another, but that it

    cannot be _____ or _____.   [4]

                           Total /14

8. (a) The diagram below shows a plan view of a ray of light striking a plane mirror.

(i) On the diagram complete the ray of light after it is reflected off the mirror. [2]

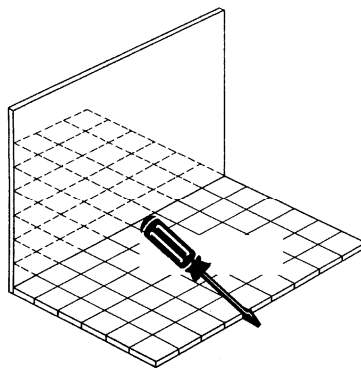For the following sentences chose words from the list below.

Smaller / the same size / larger / real / virtual / inverted / the same way up.

The size of the reflected image is _____ when compared to the object. [1]

The orientation of the reflected image is _____ when compared to the object. [1]

The type of image is said to be _____. [1]

(b) The diagram below shows an object placed in front of a bathroom mirror.

On the diagram draw what would be seen in the mirror. [1]

Total / 6

END OF EXAMINATION