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Learning To Score

## SCIENCE

Paper 2

1 Hour 30 Minutes

**DO NOT OPEN THE QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO**

1. This question paper consists of two sections: **Section A** and **Section B**.
2. Write your answers in the spaces provided in the question paper.
3. The diagrams in the questions provided are not drawn to scale unless stated.
4. Marks allocated for each question or part question are shown in brackets.
5. The time suggested to complete **Section A** is 60 minutes and **Section B** is 30 minutes.
6. You may use a **non-programmable** scientific calculator.
7. Hand in your entire answer sheet at the end of the examination.

Section	Question	Full marks	Marks
A	1	6	
	2	7	
	3	7	
	4	6	
	5	7	
	6	7	
B	7	8	
	8	12	
Total marks		60	

*This question paper consists 10 printed pages*

**Section A**

[40 marks]

Answer **all** questions.

The time suggested to complete this section is 60 minutes.

- 1 Figure 1 shows a longitudinal section of a human kidney.



FIGURE 1

- (a) Label **any two** of the three main parts of the kidney on the Figure 1:

cortex	Medulla	pelvis
--------	---------	--------

[2 marks]

- (b) (i) What is the shape of the kidney?

.....

[1 mark]

- (ii) Which part of the kidney collects urine?

.....

[1 mark]

- (c) Why does a person need a kidney transplant?

.....

[1 mark]

- (d) Name one of the waste products excreted by the urinary system.

.....

[1 mark]

2 Figure 2.1 shows the structure of a human eye.

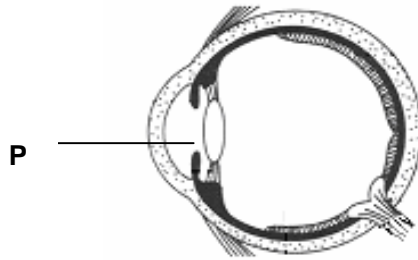


FIGURE 2.1

(a) Label the following parts on the Figure 2.1.

**A** : The part that controls the amount of light that enters the eye.

**B** : The part that forms the images.

**C** : The part that maintain the shape of the eye ball.

[3 marks]

(b) State what happens to **P** in Figure 2.1 when a person enters a dark room from a bright room.

.....

[1 mark]

(c)

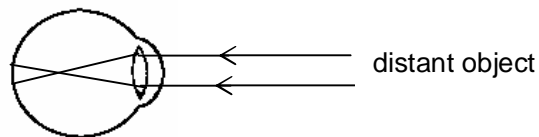


FIGURE 2.2

(i) Name the defect of vision shown in Figure 2.2.

.....

[1 mark]

(ii) What cause this defect of vision?

.....

[1 mark]

(iii) What type of lens is used to correct the defect of vision in (b)(i).

.....

[1 mark]

- 3 The apparatus is set up as shown in Figure 3. The thumbtacks W, X, Y and Z are fixed to the iron rod with melted wax. Then the iron rod is heated.

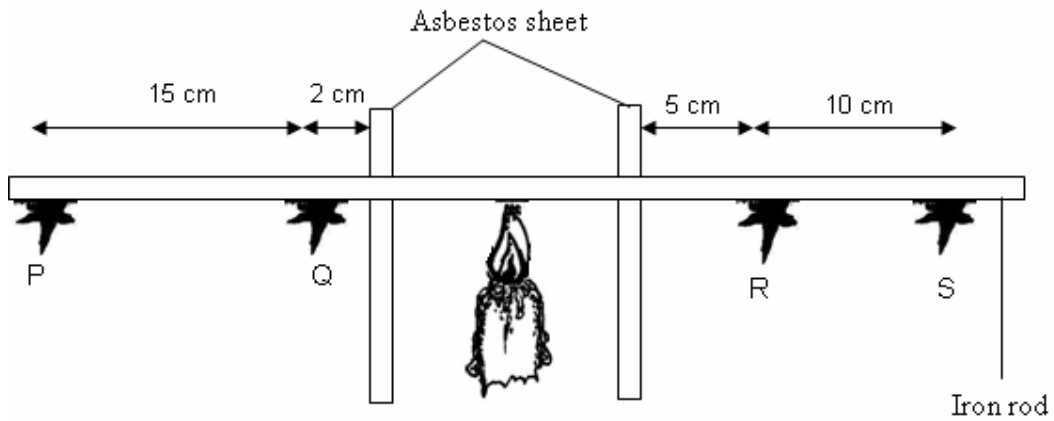


FIGURE 3

- (a) What is the method of heat transfer in the iron rod?  
 .....  
 [1 mark]
- (b) (i) Arrange in sequence the thumbtacks which will fall from the fastest to the slowest.  
 .....  
 [1 mark]
- (ii) Based on your answer in (b)(i), explain why this happens?  
 .....  
 [1 mark]
- (c) What is the function of the asbestos sheet in the above experiment?  
 .....  
 [1 mark]
- (d) (i) If the iron rod is replaced with a copper rod, predict what will happen to the thumbtacks?  
 .....  
 [1 mark]
- (ii) Why does this occur?  
 .....  
 [1 mark]

4 Figure 4 shows one of the environmental phenomena.

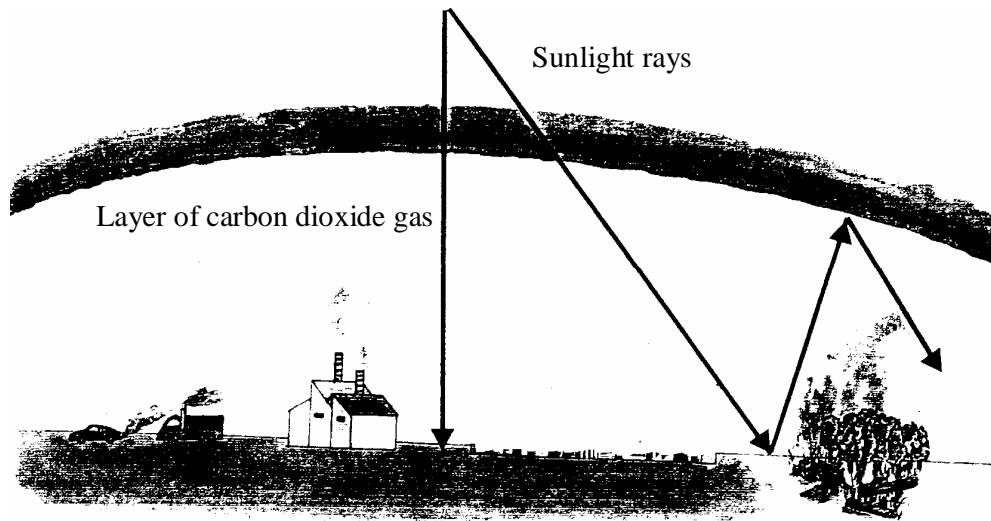


FIGURE 4

(a) Name the phenomenon in Figure 4.

.....

[1 mark]

(b) Based on Figure 4, state two human activities that contribute to the accumulation of carbon dioxide gas in the atmosphere.

(i)

.....

(ii)

.....

[2 marks]

I State two consequences of this phenomenon

(i)

.....

(ii)

.....

[2 marks]

(d) Name another phenomenon which is caused by carbon dioxide in the atmosphere.

.....

[1 mark]

5 Figure 5 shows a simple machine.

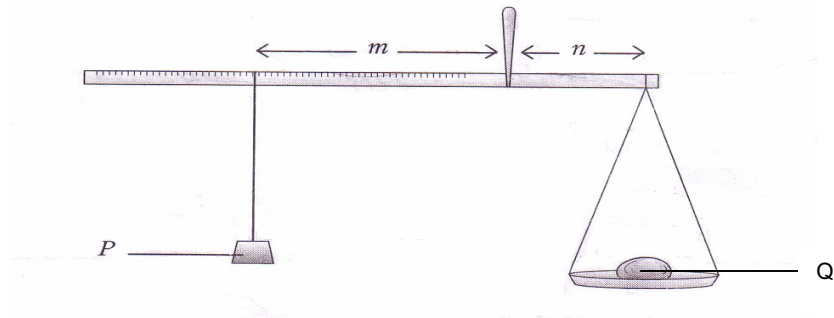


FIGURE 5

(a) What is the name of the simple machine shown in Figure 5?

.....

[1 mark]

(b) (i) Which class of lever does it represent?

.....

[1 mark]

(ii) The device in Figure 5 is in a state of equilibrium. What should be done to rebalance the device if another object is added to the scale pan?

.....

[1 mark]

(c) Use the values given in Table 1 to calculate the mass of Q in the scale pan. The scale pan has a mass of 10g.

P	M	n
20g	15cm	10cm

Table 1

.....

.....

[2 marks]

(d) Name two other simple machines that belong to the same class as the one shown in Figure 5.

(i) .....

(ii) .....

[2 marks]

- 6 Figure 6 shows an experiment that is set up to study the reaction of snail shells with dilute hydrochloric acid.

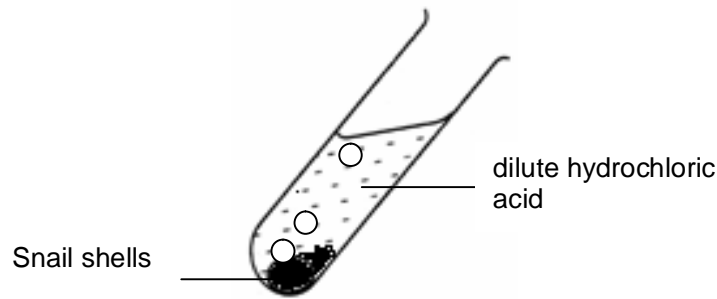
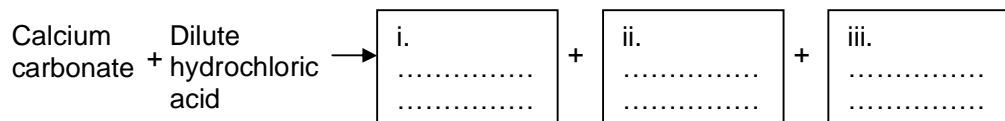


FIGURE 6

- (a) What can be observed in the test tube?  
 .....  
 [1 mark]
- (b) (i) What will happen to the lime water if the gas is passed through it during the experiment?  
 .....  
 [1 mark]
- (ii) Give a reason for your answer in (b)(i).  
 .....  
 [1 mark]

- (c) Write a word equation for the reaction.



[2 marks]

- (d) State the elements which made up calcium carbonate

- (i) .....
- (ii) .....
- (iii) .....

[3 marks]

**Section B**

[20 marks]

Answer **all** questions.

The time suggested to complete this section is 30 minutes.

7 Figure 7 shows a picture of plant P, Q, R and S.

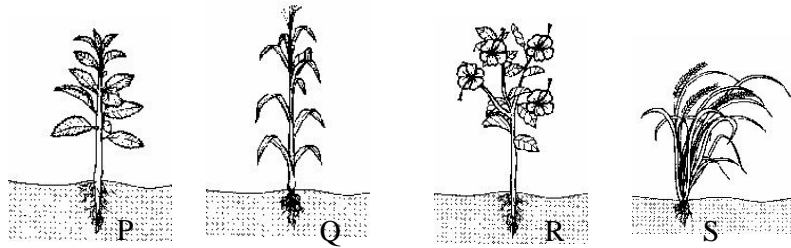


FIGURE 4

(a) State **one** characteristic of plants P, Q, R and S.

P : .....

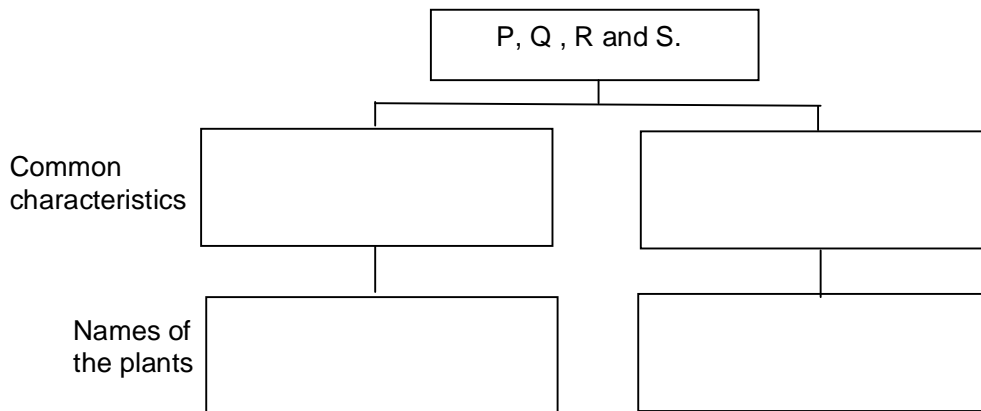
Q : .....

R : .....

S : .....

[4 marks]

(b) Classify plants P, Q, R and S into groups based on common characteristics. Name the plants belonging to each group.



[4 marks]



- 8 A group of students carried out an experiment to determine the features of a parallel circuit as shown in Figure 8.

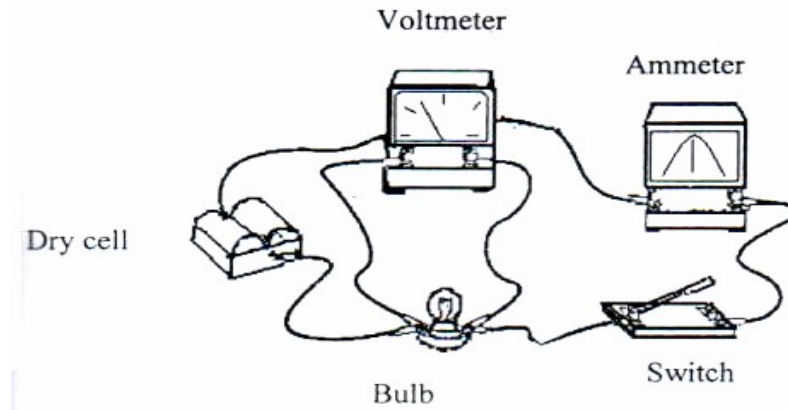


FIGURE 8

The experiment was conducted based on the following procedure :

- Step 1 Switch was closed
- Step 2 Reading of ammeter and voltmeter were recorded
- Step 3 The experiment was repeated with two, three, and four bulbs connected in parallel
- Step 4 The brightness of the bulbs is recorded each time a bulb is added

The results were recorded as shown in Table 2

Number of bulbs	1	2	3	4
Current / A	4.0	2.0	X	1.0
Voltage / V	6.0	6.0	6.0	6.0
Brightness of bulb	Bright	Bright	Bright	Bright

Table 2

(a) Draw a schematic parallel circuit that uses four bulbs.

[2 marks]

(b) Given that each of the bulb has a resistance value of 1.5 Ohm.

(i) Calculate the value of X in Table 2

[2 marks]

(ii) Calculate the amount of resistance in the circuit that uses 4 bulbs.

[2 marks]

(c) (i) State the variables involved in this experiment

Constant variable	
Manipulated variable	
Responding variable	

[3 marks]

(ii) State the relationship between the manipulated variable and the responding variable?

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[1 mark]

- (d) (i) Based on Table 2, why was the brightness of the bulbs not affected when the number of bulbs was increased ?

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[1 mark]

- (ii) Predict the brightness of the bulbs if all the bulbs are set in series.

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[1 mark]

**END OF QUESTION PAPER**