

Primary 5 · Science · P5 Advanced Papers

# Living things, light and electricity

Time **35 min**    Marks **26**    Questions **9**

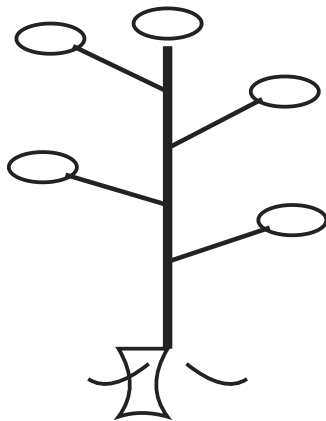
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1. Answer all the questions in the spaces provided.
2. The number of marks for each question or part question is shown in brackets [ ].
3. All diagrams are drawn for clarity, not to scale.

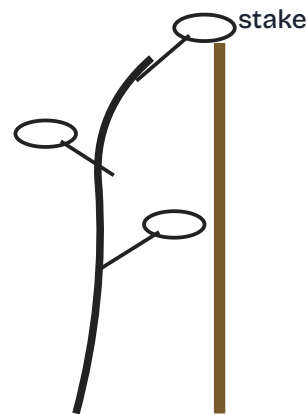
## Section A

Questions 1 to 9.

- 1 Study the two plants, M and N.



Plant M



Plant N

- (a) State the function of the stem in plant M. [1]

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ANSWER \_\_\_\_\_

- (b) How does plant N get more sunlight? [1]

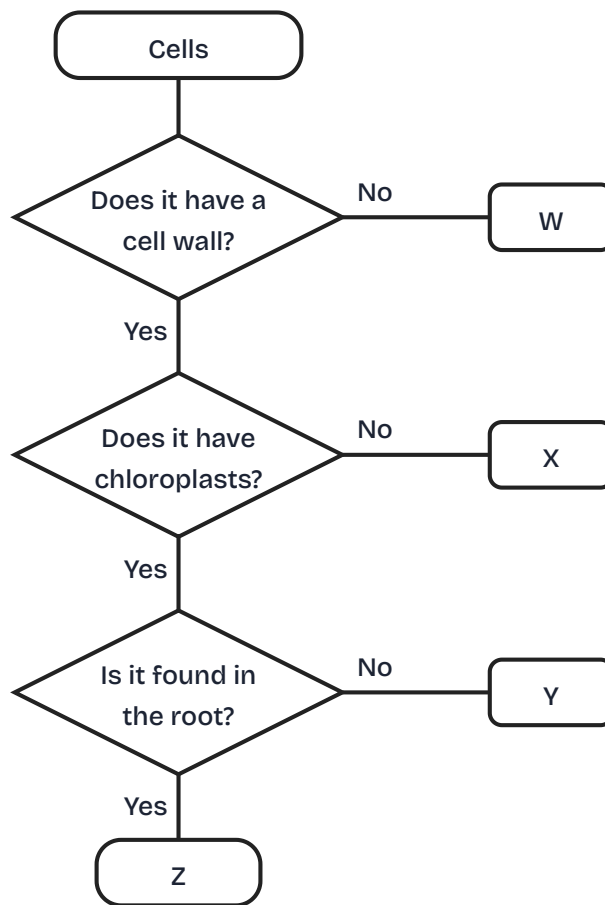
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ANSWER \_\_\_\_\_

2 Study the flowchart below. It is used to sort cells.



- (a) Cell Z is taken from a part of a plant.  
 (i) Name the part of the plant that cell Z is taken from.  
 (ii) Explain your answer in (b)(i). [2]

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ANSWER \_\_\_\_\_

3 Based on the flowchart in question 2, put a tick in the correct box for each statement. [2]

| Statement                          | True | False | Not possible to tell |
|------------------------------------|------|-------|----------------------|
| (i) Cell W is an animal cell.      |      |       |                      |
| (ii) Cell Y can make its own food. |      |       |                      |

ANSWER \_\_\_\_\_

- 4 Siti wanted to find out how the amount of light affects the number of seeds of plant K that sprout.
- She placed 50 seeds of plant K on damp cotton wool in each of four boxes. Each box was kept at 28 °C but received a different amount of light. After ten days she counted the seeds that had sprouted.

| Hours of light per day | Seeds that sprouted |
|------------------------|---------------------|
| 0                      | 46                  |
| 6                      | 45                  |
| 12                     | 47                  |
| 18                     | 46                  |

50 seeds were placed in each box.

- (a) What is the relationship between the amount of light and the number of seeds of plant K that sprouted? [1]

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ANSWER \_\_\_\_\_

- (b) Siti also noticed that the seedlings kept in the dark grew taller but had yellow leaves, while the seedlings given light had green leaves. Give a reason for the difference in the colour of the leaves. [1]

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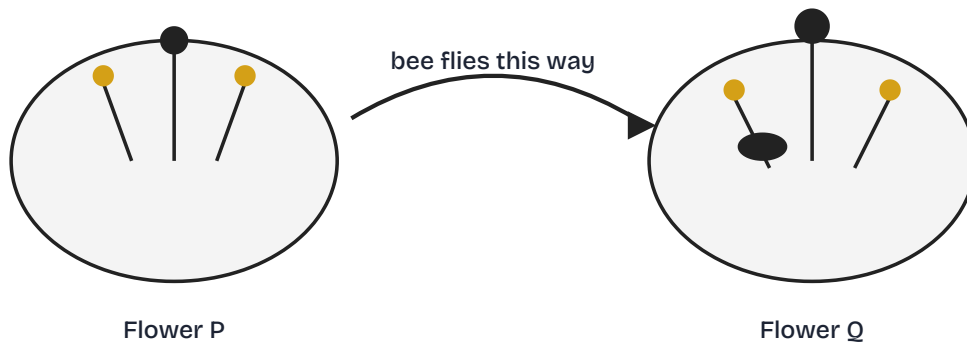
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ANSWER \_\_\_\_\_

- 5 The diagram below shows a bee visiting two flowers of the same plant, one after the other.



- (a) Based on the diagram, describe clearly how the bee helps flower Q to be pollinated. [2]

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ANSWER \_\_\_\_\_

- (b) Flower R is pollinated by wind. It has a large, feathery stigma that sticks out of the flower, and its anthers hang out on long stalks.  
State one difference between flower P and flower R for each of the following.
- (i) the stigma
- (ii) the position of the anthers [2]

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ANSWER \_\_\_\_\_

- 6** Farah wanted to find out which characteristic of flower S attracts butterfly T. She made paper flowers that looked like flower S and stood each one in an identical jar of water. She placed the jars in her garden and counted the butterflies that landed on the flowers from 9 am to 10 am for four days.
- A real flower S was placed in jar A. Paper flowers were placed in jars B, C and D.

| Jar | Shape | Size | Colour | Scent |
|-----|-------|------|--------|-------|
| B   | yes   | yes  |        |       |
| C   | yes   | yes  | yes    |       |
| D   | yes   | yes  |        | yes   |

Characteristics of the paper flowers that match the real flower

- (a) Farah put the same number of flowers in each jar. How does this keep the test fair?

[1]

| Jar         | A | B | C | D |
|-------------|---|---|---|---|
| Butterflies | 9 | 2 | 3 | 8 |

Average number of butterfly T that landed per day

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ANSWER \_\_\_\_\_

- (b) Why did Farah collect the data for four days instead of one day? [1]

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ANSWER \_\_\_\_\_

- (c) If Farah wants to find out whether the scent of the flower affects the number of butterflies, which two jars should she compare? [1]

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ANSWER \_\_\_\_\_

- (d) Based on the results, what conclusion can Farah draw? [1]

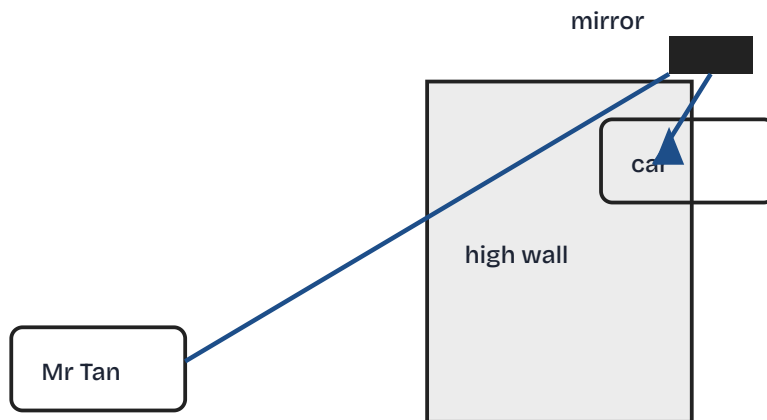
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ANSWER \_\_\_\_\_

- 7 Mr Tan wanted to drive out of a car park. A high wall blocked his view of the road, so he could not see the cars coming from the right. A mirror was fixed at the exit, as shown below.



- (a) Mr Tan could not see the car on the road directly from where he sat. State the property of light that explains this. [1]

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ANSWER \_\_\_\_\_

- (b) Using the mirror, Mr Tan could see the car. On the diagram, the path of the light has been drawn for you. State what happens to the light at the mirror. [1]

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ANSWER \_\_\_\_\_

- 8 Ravi set up a circuit with a bulb, a switch and some batteries arranged in series. He closed the switch in a dark room and measured how bright the bulb was. He repeated this with one battery, then two, and so on up to five batteries.

| Number of batteries | Brightness (units) |
|---------------------|--------------------|
| 0                   | 0                  |
| 1                   | 20                 |
| 2                   | 45                 |
| 3                   | 70                 |
| 4                   | 95                 |
| 5                   | 0                  |

Brightness of the bulb

- (a) How does the number of batteries arranged in series affect the brightness of the bulb? [2]

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ANSWER \_\_\_\_\_

- (b) Why was it important for Ravi to carry out the experiment in a dark room? [1]

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ANSWER \_\_\_\_\_

- (c) Ravi has two bulbs and one battery. He wants both bulbs to light up, but if one bulb fuses, the other should stay lit. Should he arrange the two bulbs in series or in parallel? Explain your answer. [1]

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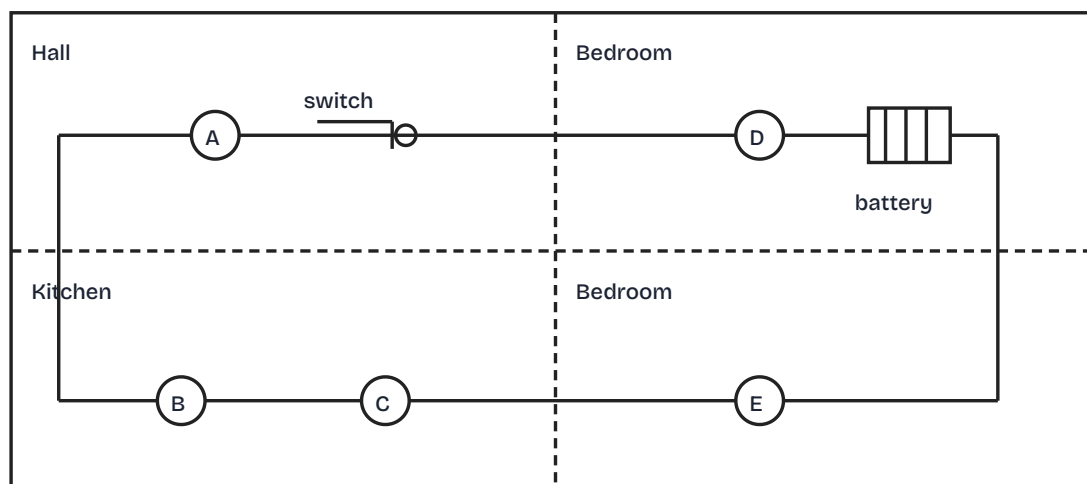
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ANSWER \_\_\_\_\_

- 9 The diagram below shows how five bulbs, A, B, C, D and E, are arranged in a model house with a hall, a kitchen and two bedrooms. There is only one switch, and it is open.



- (a) State two disadvantages of using the circuit shown above. [2]

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ANSWER \_\_\_\_\_

- (b) Two more switches are added so that the hall and the kitchen can each be switched off on their own, while the other bulbs stay lit. Which two bulbs should each get their own switch: A and B, or D and E? Explain your answer. [2]

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ANSWER \_\_\_\_\_

END OF PAPER