PSLE SCIENCE (STANDARD)

Answering Techniques in PSLE Science Structured & Open-Ended Questions

1. 'Aim' Type Question

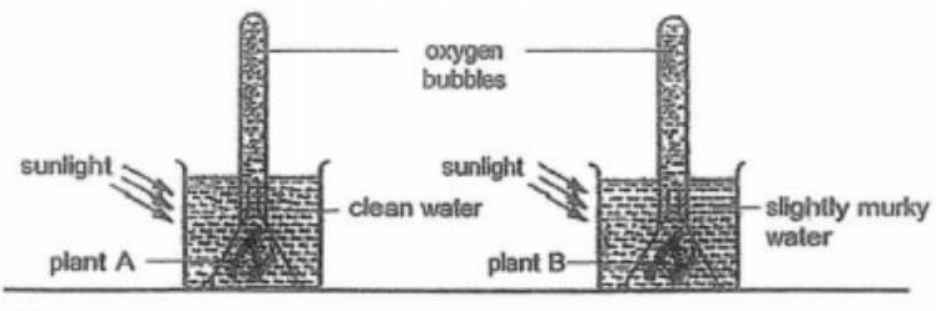
An 'Aim' type question is usually phrased like:

*"What is the **aim** of the of the experiment?"*

Pupils need to identify and highlight **2 types of variables** that are indicated in the question ie **CV (Changed Variable)** and **RV (Result Variable). CV** is the variable that is purposely changed and the RV is the variable that gives the results that the experiment provides at the end of the investigation. All other variables in the experiment should remain the same. Then the structure of the 'aim' statement should follow ***'To find out if <CV> affects <RV>'***

Example

Two similar water plants, A and B, were placed in identical beakers with the same volume of water and under direct sunlight. Plant A was placed in clean water while plant B was placed in slightly murky water.



The number of oxygen bubbles given out by both plants over a period of 20 minutes was then counted.
Based on the given information what is the aim of the experiment?

Thinking Process
In the above question,
- (CV): types of water that Plant A and B are placed in (clue: **clean water & murky water**)
- (RV): *number of oxygen bubbles given out by both plants*

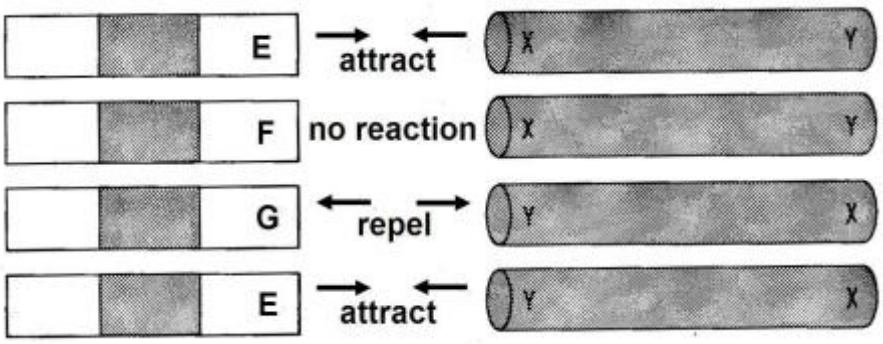
Sample Answer:
To find out if the types of water that Plant A and B are placed in affect *number of oxygen bubbles given out by both plants*

2. '**Explain' Type Question**

In 'Explain' type of question, the word **'explain'** or phrase **'give a reason'** usually exist in the question. Pupils need to identify the **EVIDENCES (E)** in the experiment and relate the evidence to the scientific **CONCEPT (C)** that the experiment displays**.** Pupils generally lose marks in this type of question as their explanation usually lacks either the **EVIDENCE** or the **CONCEPT.**

Example

*Alex was given 3 metal bars, **E**, **F** and **G** and a cylindrical magnet marked **X** and **Y**. The cylindrical magnet was brought close to each metal bar as shown and the following outcomes were observed.*



Which metal bar is a magnet? Explain your answer?

Thinking Process
In the above question,
- **(E):** Metal bar G repel magnet XY
- **(C):** Only magnets repel each other

Sample Answer:
Metal bar G is a magnet. It repels magnet XY (E) and only magnets repel each other (C)

Strategies for Answering Multiple Choice Questions

□ Read and understand the question.

□ Study the diagram (if any)

□ Look out for key words and highlight/ underline/circle them.

□ Identify the topic which is tested.

□ Recall the related concepts and write them down.

□ Link the concepts to the question.

□ Eliminate the incorrect options and choose the best answer.

Strategies for answering Open-ended Questions

□ Read and understand the question.

□ Interpret diagrams/graphs/charts.

□ Look out for key words and highlight, underline or circle them.

□ Identify topic tested in the question.

□ Recall and apply the relevant concepts for the topic.

□ Take note of the marks awarded to each question.

Weaknesses in answering Open-ended Questions

□ Not understanding the question (out of context)

□ Answer is too general and not specific. (eg. giving only motherhood statements)

□ Answer is incomplete.

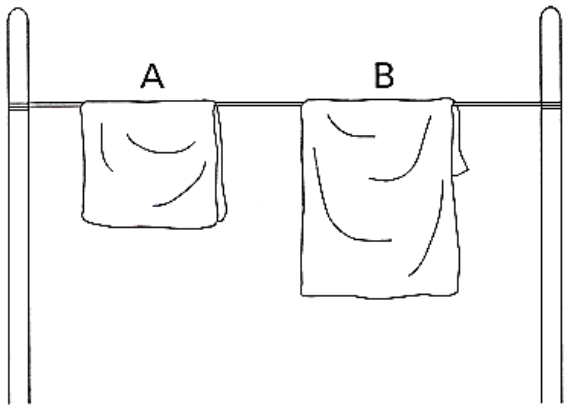
□ Too much unnecessary information (1/2 mark is deducted for each additional incorrect concept.)

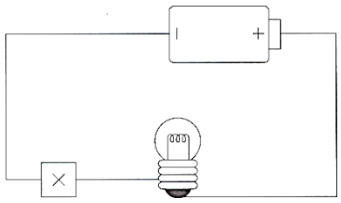
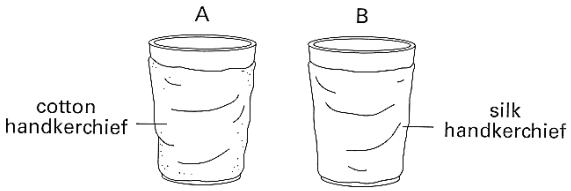
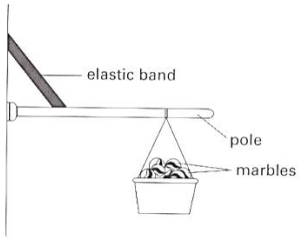
□ Stating what is given in the question (observation) without mentioning the scientific concept. For example: The lid is covered instead of “air cannot enter the box”, the towel is open instead of “it has a greater exposed surface area”,

Keywords and expected answer

Keywords	Expected answer
What… Which part… State... Name	Can be a one word answer or a short sentence (Recalling of facts. Reasons are not needed.)
How… Describe... Explain… Why… Give a reason…	Answers require application of concepts. For description of experiments, detailed procedure is expected.
What is the aim of the experiment?	A sentence stating what you hope to find out from the experiment. [Eg. To find out if the intensity of light affects the rate of photosynthesis.
What conclusion can you draw…	A sentence stating the outcome of the experiment.
What can you say about… What is the relationship between…	States a related scientific concept, property, relationship or pattern

Examples

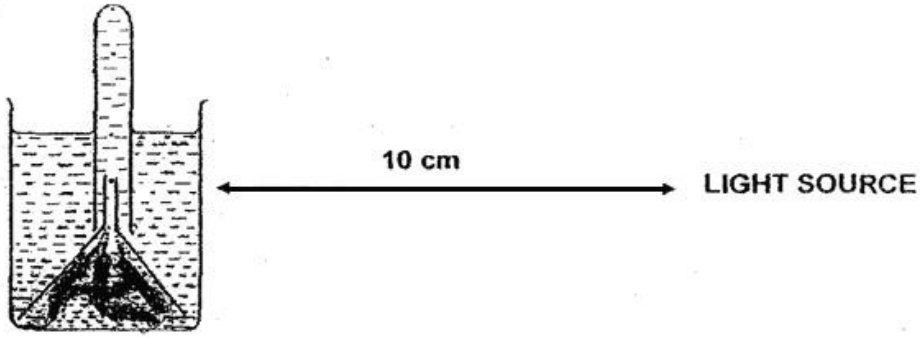
Keywords	Examples
1)State	State the conditions necessary for plants to carry out photosynthesis. Ans: Carbon dioxide, water and light
2) Explain	Two similar wet towels were hung out to dry in the sun. The diagram below shows how the towels were hung.  **State** which towel will dry faster. **Explain** why. Ans: Towel B. It has a larger exposed surface area, allowing the water in it to evaporate faster.
3) What does this experiment tell you?	When object X is connected to the circuit, the bulb lights up.

	 What does this activity tell you about object X? Ans: X is a conductor of electricity.
4) What is the aim of the experiment?	Jill poured equal amount of water at 85^0C into Glass A and Glass B. She wrapped Glass A with a cotton handkerchief and Glass B with a silk handkerchief. Both handkerchiefs were of the same size. After 15 minutes, Jill measured the temperature of the water in the glasses again.  What is the of her experiment? Ans: The aim is to find out which material is a better insulator of heat.
5) What would happen	A thick elastic band was stretched and attached to the wall at one end and a pole holding a basket of marbles at the other end.  a) What would happen to the length of the elastic band if more marbles are added to the basket? The elastic band would stretch and become longer.

Answering Open- Ended Questions

Example 1

David placed an inverted test-tube containing some water and hydrilla inside a beaker of water as shown in the diagram below.



After ten minutes, he counted the number of bubbles produced by the water plants over 1 minute. He repeated the procedure 4 more times, increasing the distance between the light source and the beaker. He recorded his observations in the table shown below .

Distance of light source from beaker (cm)	Number of bubbles produced in 1 minute
30	60
40	50
50	40
60	30
70	20

Before attempting to answer the question, write the,

Topic: Energy and Photosynthesis
Sub-Topic : Photosynthesis in Plants.
Science Concept : Plants can make their own food only in the presence of light energy, carbon dioxide and water.
Inferring : The bubbles formed must be oxygen

(a) Write down one observation David can make from the above experiment.[1m]
As the distance of the light source from the beaker increases, the number of bubbles produced in 1 minute decreases.

(b) Write down one conclusion David can make from the above experiment.[1m]

The further the distance between the light source and the hydrilla, the slower the rate of photosynthesis.