



Give the marks for the points in the marking scheme; an answer in other words that says the same is right.

1 Key words

1. curiosity
2. hypothesis
3. practical work
4. report
5. objective
6. model
7. collage
8. distillation

K • 4

Each carries 0.5 mark.

2 Multiple choice

- i. **c. with the curiosity raised by seeing the objects or events**

K • 1

Seeing something makes us curious; the questions come from that curiosity. Practical work, collecting data and analysis come later.

- ii. **a. separating salt crystals from salt solution**

U • 1

Separating salt from its solution needs laboratory apparatus (a flask, a burner, a dish or a condenser). The field visit is done outside, and looking at a flower or rubbing a comb needs no laboratory.

- iii. **a. objective**

K • 1

The order is title, objective, materials, figure, procedure, observation, analysis, result, conclusion, precaution. The title isn't among the options, so of these four the **objective** comes first.

- iv. **b. the steam is cooled and turns back into water**

U • 1

Condense means to turn from a gas into a liquid. The cold water flowing around the inner tube takes heat from the steam, so it becomes water again. The boiling happens in the round-bottom flask, and the salt stays there.

- v. **c. the diaphragm**

A • 1

The rubber sheet at the bottom of the bottle is pulled down and let go, like the **diaphragm** at the bottom of the chest. The balloons are the lungs, the pipe is the windpipe, and the bottle is the chest.

3 Label the diagram

- | | |
|-----------------------|--------------------|
| 1. thermometer | 5. salt solution |
| 2. burner | 6. cold water in |
| 3. condenser | 7. conical flask |
| 4. round-bottom flask | 8. distilled water |

K • 4

Each carries 0.5 mark.

4 Very short answers

- a. **MARKING SCHEME**

K • 1

✓ A guess (possible answer) that can be tested.

- b. **MARKING SCHEME**

K • 1

✓ Past tense.



- c. MARKING SCHEME K · 1
✓ 23.5°.
- d. MARKING SCHEME U · 1
✓ To show things we can't see directly, so that the facts become clearer.

5 Short answers

- a. MARKING SCHEME K · 2
✓ The careful, step-by-step study done to find the answers to the questions (what, why, how) that come when we observe an object or an event.
✓ Its steps named: observe, ask, guess, test, record, analyze and conclude, report (any four in order).
- b. MARKING SCHEME U · 2
✓ Any one difference, e.g. an observation is what is seen or measured during the work; a result is what the observations show once they are analyzed.
✓ Any second difference, e.g. observations are written while the work is done, the result after the analysis (or an example of each).
- c. MARKING SCHEME U · 2
✓ Any one difference, e.g. practical work is an activity done with real things to test or find out a fact; a model is a thing made to show how something looks or works.
✓ Any second difference, e.g. practical work gives new data and results, a model shows a known fact we can't see directly (or an example of each: distilling salt water, a globe).
- d. MARKING SCHEME U · 2
✓ Water let in at the bottom fills the whole jacket (from the top it would run straight out).
✓ So the steam is cooled well all along the tube and turns back into water.
- e. MARKING SCHEME U · 2
✓ The flame went out after a short time (and the water rose a little inside the glass).
✓ Air contains oxygen, which is needed for burning.

6 Long answer

ANSWER

When we observe an object or an event carefully, we become **curious**, and questions come to our mind: what, why and how. Trying to answer them step by step is scientific learning.

Example: we wake up every morning to the sound of an alarm clock. Thinking about it, we ask: How does the clock make the sound? How does the sound reach our ears? How do we hear it? To answer, we can study how sound is made, test our guesses (for example, touch a ringing bell to feel it vibrate), record what we find, conclude that sound is made by vibrations that travel through the air to our ears, and write a report.

MARKING SCHEME

- ✓ Observing an object or an event makes us curious.
- ✓ Questions come to our mind: what, why and how.
- ✓ A suitable example given (e.g. the alarm clock: how does it make the sound, how does the sound reach our ears).
- ✓ The answers are found step by step: guessing, testing, recording, concluding and reporting (shown for the example).

U · 4



7 Think

ANSWER

HA - 2

The flame needs a steady supply of **fresh air**, because of the **oxygen** in it. Fresh air comes in through the holes near the bottom and reaches the flame. The hot gases made by burning (carbon dioxide and water vapor) are lighter than the cold air around them, so they rise and leave through the holes at the top. This keeps fresh air flowing past the flame all the time.

Without the holes, the lantern would be just like the candle under the glass: the flame would soon use up the oxygen it can reach, smoke, and go out. The glass is there to protect the flame from the wind, not to shut out the air.

MARKING SCHEME

- ✓ Fresh air (with its oxygen) comes in through the holes at the bottom and reaches the flame; the hot gases made by burning rise and leave through the holes at the top.
- ✓ Without the holes the flame would soon use up the oxygen it can reach and go out, like the candle under the glass.

8 Activity: Squeeze a bottle (Sample report 1)

(not marked)

WHAT STUDENTS SHOULD FIND

The closed bottle can be squeezed a little and gets harder to squeeze the more it is pressed; when the lid is opened, air rushes out. Title: Observation of the volume of air. Objective: to test whether air has a fixed volume. Materials: an empty bottle with its lid. Result: the air in the bottle was squeezed into a smaller space. Conclusion: air has no fixed volume; it can be compressed. The lid must be tight, or the air leaks out while the bottle is squeezed.

Marks by level	Knowledge	Understanding	Application	Higher ability	Total
Marks	15	15	1	2	33

