



GRADE 9 INTEGRATED SCIENCE PRACTICAL

TASK 1: (10 MARKS)

Your school science club wants to demonstrate how dirty water can be cleaned using a simple filtration system.

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Apparatus and Materials

- i. Plastic bottle (cut into two parts)
- ii. Cotton wool
- iii. Fine sand
- iv. Gravel/pebbles
- v. Dirty water
- vi. Beaker or container

Procedure

1. Place cotton wool at the bottom of the bottle funnel.
2. Add a layer of fine sand.
3. Add a layer of gravel on top.
4. Pour dirty water through the filter.
5. Observe the water collected in the beaker.

Questions

(a) Draw and label the filtration apparatus used. (4 marks)

(b) State TWO observations made during the activity. (2 marks)

(c) Explain why sand is included in the filter. (2 marks)

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(d) Name ONE method that can be used to make the filtered water safer for drinking. (1 mark)

(e) State ONE safety precaution observed during the activity. (1 mark)

TASK 2: (20 MARKS)

A learner wants to find out whether leaves lose water to the environment.

Apparatus and Materials

- a) Fresh leafy plant
- b) Transparent polythene bag
- c) String or rubber band

Procedure

1. Cover a leafy branch with a transparent polythene bag.
2. Tie the bag firmly using a string.
3. Leave the setup in sunlight for 30-60 minutes.
4. Observe the inside of the polythene bag.

Questions

(a) Draw and label the experimental setup. (5 marks)

(b) State TWO observations made after the experiment. (2 marks)

(c) What is transpiration? (2 marks)

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(d) Explain how the observations show that transpiration occurred. (3 marks)

(e) State THREE importance of transpiration in plants. (3 marks)

- i. _____
- ii. _____
- iii. _____

(f) Name TWO factors that affect the rate of transpiration. (2 marks)

- i. _____
- ii. _____

(g) State TWO safety precautions observed during the practical activity. (2 marks)

- i. _____
- ii. _____

(h) Suggest ONE way farmers can reduce excessive water loss from crops during hot weather. (1 mark)

INTEGRATED SCIENCE PRACTICAL

TASK 1: FILTRATION (10 MARKS)

(a) Filtration apparatus (4 marks)

You should draw and label:

- Plastic bottle funnel (cut bottle inverted)
- Gravel (top layer)
- Sand (middle layer)
- Cotton wool (bottom layer)
- Beaker/container (collecting filtered water)
- Dirty water being poured at top

(Labels must clearly show the layers from top to bottom.)

(b) TWO observations (2 marks)

- i. The water becomes clearer after passing through the filter
- ii. Dirt particles are trapped in the sand, gravel, and cotton wool

(c) Why sand is included (2 marks)

Sand traps small suspended particles that pass through gravel, helping to make water cleaner.

(d) One method to make water safe for drinking (1 mark)

Boiling the water

(e) ONE safety precaution (1 mark)

Handle the glass/plastic bottle carefully to avoid cuts or injury.

TASK 2: TRANSPIRATION (20 MARKS)

(a) Experimental setup (5 marks)

Your diagram should show:

- A leafy branch
- Transparent polythene bag covering leaves
- String/rubber band tying the bag tightly
- Sunlight direction indicated
- Moisture droplets inside bag (later observation label)

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(b) TWO observations (2 marks)

- i. Water droplets form inside the polythene bag
- ii. The inside of the bag becomes moist/foggy

(c) Definition of transpiration (2 marks)

Transpiration is the loss of water vapour from plant leaves through stomata into the atmosphere.

(d) Explanation (3 marks)

Water vapour released from the leaves collects inside the polythene bag. It cools and condenses into water droplets, showing that water was lost from the leaves through transpiration.

(e) THREE importance of transpiration (3 marks)

- i. Helps in cooling the plant
- ii. Helps in transport of water and minerals from roots to leaves
- iii. Maintains turgidity of plant cells

(f) TWO factors affecting transpiration (2 marks)

- i. Temperature
- ii. Humidity (or wind speed/light intensity also accepted)

(g) TWO safety precautions (2 marks)

- i. Handle the plant carefully to avoid damage
- ii. Ensure the polythene bag is tied properly to avoid slipping or suffocation hazard

(h) ONE way to reduce water loss (1 mark)

Mulching the soil or watering crops early in the morning/evening (either accepted)