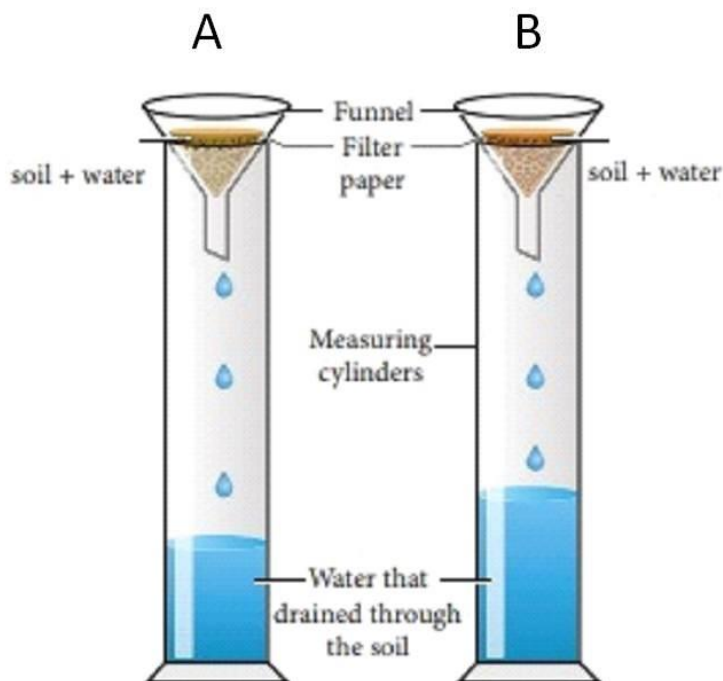


INTEGRATED SCIENCE 2

- 1a . (i) An experiment to determine the conditions necessary for rust.
 (ii) To remove oxygen
 (iii) To prevent air from from entering the water / To seal out air
 (iv) To absorb moisture
 (v) It rusted due to the presence of air and water
 (vi)
 (α) The nail in Test B did not rust because it was exposed to only water/moisture.
 (β) The nail in Test C did not rust due to the absence of water/moisture
 (vii) To Seal out air or to prevent air from getting into contact with the metal.

- 1b. (i) To demonstrate that sunlight is necessary for photosynthesis
 (ii) (α) I – To kill living cells
 (β) II – To remove chlorophyll
 (γ) III – To soften the leaf and wash off alcohol
 (iii) Leaf A turned turned blue-black
 (iv) The color change exhibited was due to the presence of starch.
 (v) To remove any existing starch from the leaves.
 (vi) The experiment demonstrates that without sunlight, photosynthesis cannot occur.

1c.



- (i) Equal quantities of soil samples of A and B are taken using the beam balance and then transferred into separate funnels each fitted with filter papers.
 (ii) The funnels are mounted over a measuring cylinder and equal volumes of water is poured into each funnel.
 (iii) The setups are allowed to stand until water drains completely in each setup.
 (iv) The soil sample within the setup where the least water was drained into the measuring cylinder is the soil which holds more water (Setup A).

- 1d. (i) To show that heat is transferred through metals by conduction.
- (ii) 100 degrees celsius.
- (iii) The pins eventually fall off as the wax melts.
- (iv) The temperature at A would be the highest, followed by B and then C.
- (v) Heat is transmitted by the sun to the earth by radiation.

2. (a) (i) A food chain is a linear sequence of organisms through which nutrients and energy pass as one organism eats another.

- (ii) Plants are primary producers because they produce their own food.
- (iii) Consumers

- (b) (i) (α) A – Umbra
- (β) B – Penumbra

(ii) It illustrates that light travel in a straight line

- (c) (i) Add water to the mixture of sand and sugar and stir vigorously.
- (ii) Filter the mixture using a filter paper.
- (iii) Heat the filtrate to evaporate the water.
- (iv) Pure sugar is obtained after all the water evaporates.

(d) Afforestation, addition of manure, planting cover crops, crop rotation and mulching.

3. (a)(i) Potential energy

(ii) Potential Energy (P.E) = mass x gravity x height = $100 \times 10 \times 2 = 2000 \text{ J}$

(b) (i) Matter is anything that has weight and occupies space or matter is anything that has mass and takes up volume.

(ii) solid, gas and liquid.

(c) (i) Loamy soil normally contains equal parts of clay, silt, and sand and large quantities of organic matter and nutrients.

(ii) Nitrogen , potassium, Phosphorus, Calcium, Iron & Magnesium.

(d) (i) (α) cholera – Vibrio Cholerae

(β) tuberculosis – Mycobacterium tuberculosis or tubercle bacillus

(ii) 1. Eating Hot foods

2. Washing hands with soap and under running water.

3. Proper disposal of faecal matter

4. Keeping the environment clean

4. (a) Tomato plant is likely to wilt if too much fertilizer is applied due to the high increment of soil concentration. This causes the loss of water by action of osmosis.

(b)(i) eating or drinking water in the laboratory – Accidental ingestion of poisonous substances.

(ii) Walking barefooted – Injury by broken bottles or pins/ Slipping / Injury by spilled acids.

(iii) Skin irritation/corrosion/burns

(c) (i) Night Blindness

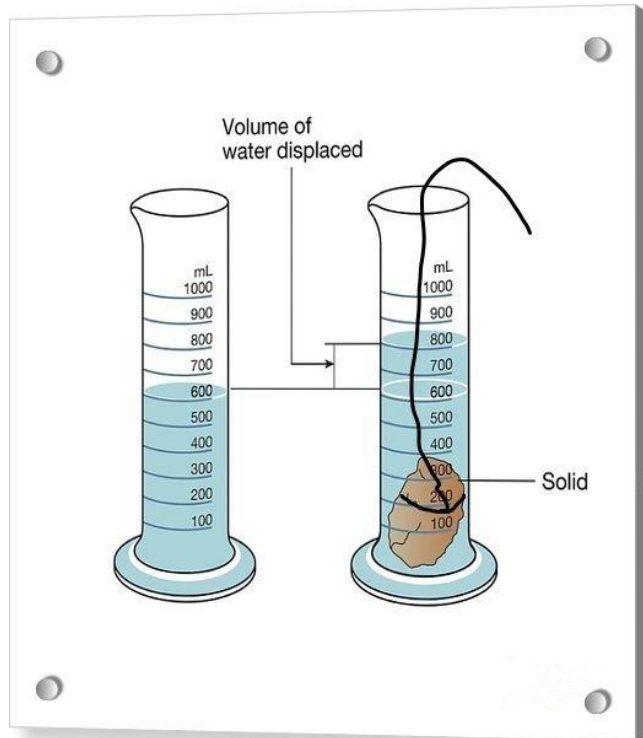
(ii) Vitamin A

(iii) Tomatoes / Egg / Liver / Green leafy vegetables / cod Liver oil / Carrot

(d) (i) Force is a push or pull.

(ii) This is due to the lack of friction between the car tyres and the road which is caused by the presence of water on the road surface.

5.



(i) Fill the measuring cylinder with ample water.

(i) Record the volume as V_1

(ii) Tie a thread to the irregular shaped lead ball and gently dip into the cylinder with water.

(iii) Record the new Volume (V_2)

(iv) Calculate the difference in volumes ($V_2 - V_1$) as V_3 .

(v) V_3 , as calculated, is the volume of the irregular shape lead ball.

(b) Reproduction, growth, respiration and feeding.

(c) (i) Pollution is the introduction of harmful substances into the environment.

(ii) smoke, dust, fum