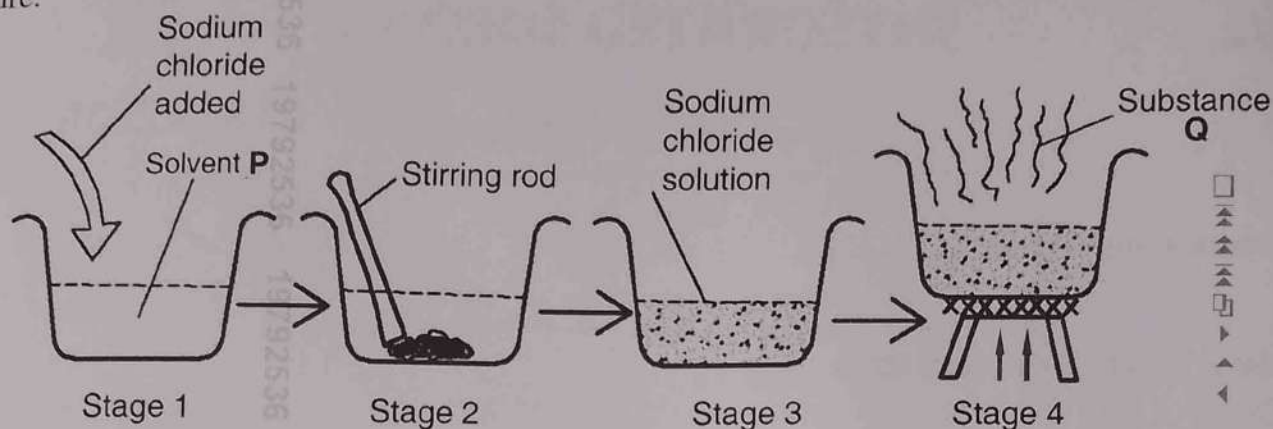


QUESTION ONE (10 marks)

The following experimental set-up shows the stages of preparing and separating a homogeneous mixture.



(a) (i) Name the solvent **P** used in Stage 1. (1 mark)

(ii) State **two** expected observations in Stage 2. (2 marks)

(iii) What is the identity of substance **Q** in Stage 4? (1 mark)

(b) Why was stirring important in Stage 2? (1 mark)

(c) Name **one** method that was used to remove the undissolved sodium chloride crystals in Stage 3. (1 mark)

(d) (i) Describe what was done to the solution to obtain sodium chloride crystals and substance **Q** in Stage 4. (2 marks)

(ii) Which method of separating mixtures is demonstrated in Stage 4? (1 mark)

(iii) State **one** laboratory safety measure that should be observed when carrying out the experiment. (1 mark)

QUESTION TWO (10 marks)

- (a) A learner carried out an experiment to identify the external parts of a plant leaf. She observed the external parts using a hand lens. The leaf observed is shown in the following picture.



- (b) On the picture, label the following parts:

- (i) midrib
- (ii) vein
- (iii) lamina

(1 mark)

(1 mark)

(1 mark)

- (c) State **three** observable adaptations of the leaf to its functions.

(3 marks)

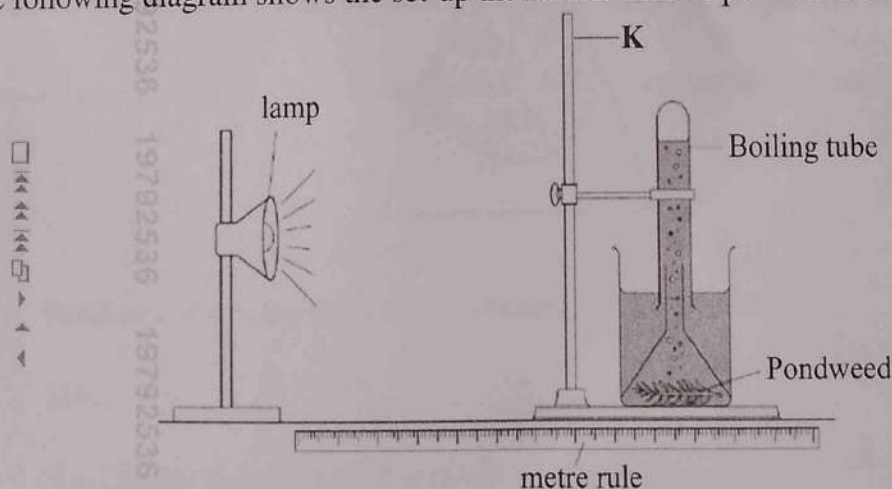
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- (d) The learner thereafter investigated the effect of light intensity on the rate of photosynthesis.

The following diagram shows the set-up the learner used to perform the experiment.



The learner:

- set up the apparatus as shown in the diagram;
- placed the lamp 10 cm from the pondweed;
- turned the lamp on and counted the number of bubbles produced in one minute;
- repeated the steps with the lamp at different distances from the pondweed.



- (i) Identify the apparatus labelled **K**.

(1 mark)

- (ii) The following table shows the learner's results.

Distance of lamp from pondweed in cm	Number of bubbles produced per minute			
	Trial 1	Trial 2	Trial 3	Mean
10	68	66	67	67
20	62	63	61	L
30	52	51	53	52
40	31	32	30	31
50	13	14	15	14

Determine:

- (I) the value of **L** in the table.

(1 mark)

- (II) the distance of the lamp from the pondweed when the mean of the number of bubbles is 31.

(1 mark)

- (iii) Complete the following statement to form the conclusion from the experiment.

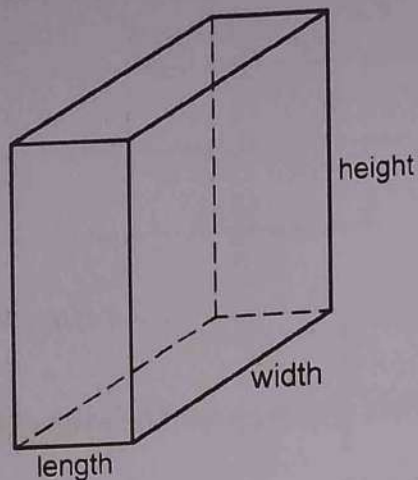
As light intensity increases

(1 mark)



QUESTION THREE (10 marks)

The following diagram shows a wooden block drawn to scale.



(a) Using a ruler, measure and record:

(1 mark)

(i) length

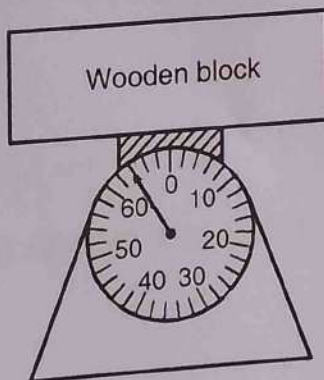
(1 mark)

(ii) width

(1 mark)

(iii) height

(b) The wooden block is placed on a beam balance whose units are in grams as shown in the following diagram.



(1 mark)

(i) Read and record the mass of the wooden block in grams.

Mass

(1 mark)

(ii) Convert the mass recorded in (b) (i) into kilograms.

- (c) Determine the weight of the wooden block. Weight (W) = mass $\times$ gravity
where gravity = 10 N/kg.

(2 marks)

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- (d) Calculate the maximum pressure (P) that would be exerted by the wooden block on a surface.

(3 marks)



Use the formula: Pressure (P) = Force/Area

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