DEPARTMENT OF PHYSICS

END OF TERM 1 EXAMINATION 2023

S.1PHYSICS

Paper 1

1 hours 30 minutes

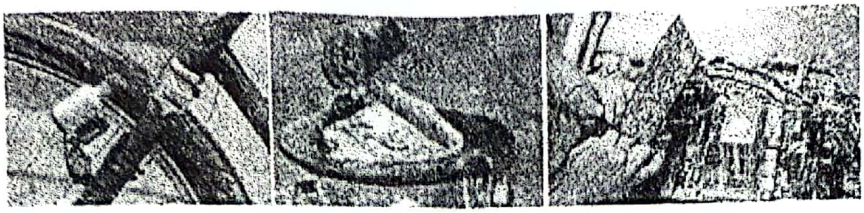
STUDENT'S NAME:.....

CLASS & STREAM: ..... MARKING GUIDE .....

**INSTRUCTIONS TO CANDIDATES**

- Attempt **all questions** by filling the answers in the spaces provided.

1. (a) Look at the pictures in figure 1.0 and :



A B C Fig1

(i) identify the branch of physics being applied in each picture. (3marks)

A Magnetism or Electricity and light

B Heat

C Mechanics / Electronics

(ii) explain what is happening in each picture. (3marks)

A. Dynamo rolling on the tyre to produce electricity that lights the la

B. Heat is being used to fry the egg

C. Some one repairing a computer, radio or T.V (motherboard

(b) (i) Mention any one important role physics has played in making communication easy. making of phones, computer, T.V, etc. (1mark) 01

(ii) A laboratory is a room or place specifically designed for scientific experiments. Give any 3qualities of a good physics laboratory. [3]

It must have a first aid kit

It should have an emergency door any (3)

It should have a fire extinguisher

It should be well ventilated

It should have a lab personnel to manage it.

It should be spacious with water and gas taps

2. (a) Name the instrument you would use to measure the following. [4]

Length of a book ..... metre rule .....

Diameter of a ball bearing ..... Vernier caliper .....

Thickness of paper ..... Micrometer screw gauge .....

Length of the football pitch ..... Tape measure .....

(b) (i) Copy and complete the following table. (5marks)

| Quantity | SI unit | Unit symbol |
|---|---|---|
| Mass | Kilo gramme | kg |
| Length | metres | m |
| Time | Seconds | s |
| Area | Square metre | $m^2$ |
| Volume | Cubic metre | $m^3$ |

(ii) Classify the physical quantities in (b)(i) above into fundamental (basic) and derived quantities. (2marks)

Fundamental ..... mass, length, time ..... any two .....

.....

Derived ..... Area, volume ..... any two .....

.....

3. The amount of space occupied by the book is the area of the book, similarly, the amount of space occupied by a piece land is the area of your piece of land, therefore area is a two-dimensional space occupied by an object.

(a) Mention any 3 important uses of area measurement. (3marks)

- It is used in tiling the house
- In roofing buildings (any other use)
- Demarketing a piece of land etc.

(b) Your school wants to tile a dining hall measuring 30m by 15m.

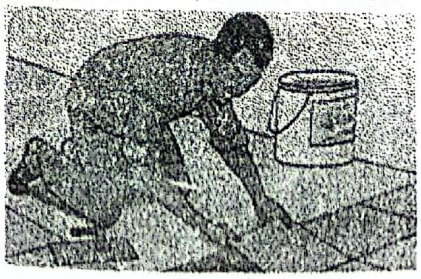


fig. 2.0

If a tile measures 20cm by 10cm and costs sh.45000.

(i) How many tiles are required (3marks)

$$\text{NR of tiles} = \frac{\text{Area of the hall}}{\text{Area of one tile}} = \frac{30 \times 15}{0.2 \times 0.1}$$

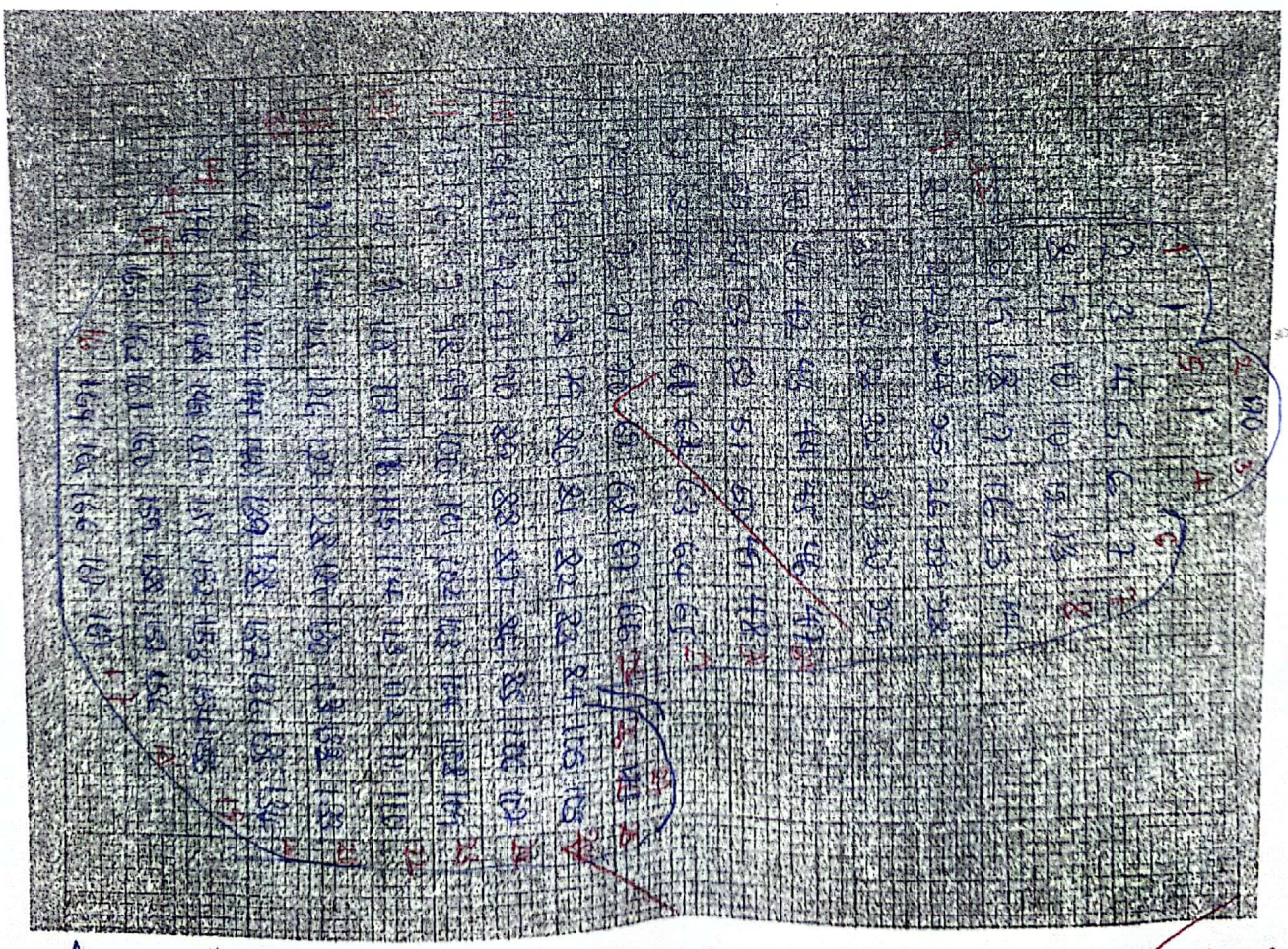
$$= 22500 \text{ tiles}$$

(ii) How much money should be spent on all the required tiles. (2marks)

$$\text{Amount of money required} = 22500 \times 45000$$

$$= 1,012,500,000 \text{ shillings only.}$$

(c) Place your palm on the graph paper below and trace its boundary. Use it to estimate the area of your palm.



(05)

Area of the palm = Number of full squares + $\frac{\text{Number of incomplete squares}}{2}$ (3marks)

$= 172 + \frac{84}{2}$

$= 189 \text{ cm}^2$

4. (a) Look at the picture in figure 3.0 below, shows how physics is applied in our daily life.

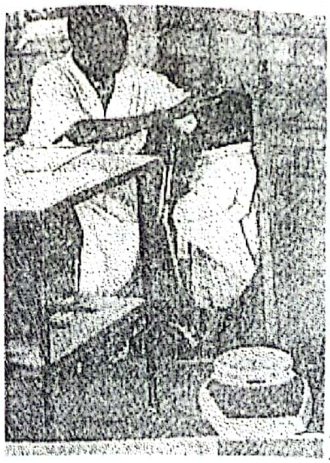


Fig. 3.0

(i) Explain what is happening in the daily application of physics demonstrated in picture 3 above. (2marks)

The tailor is measuring the length or height of the boy.
probably to design the appropriate size of the boy's clothes.

(ii) Mention any two applications of physics in daily life. (2marks)

- Marking a plain ground
- Designing size of clothes
- finding out your height
- Knowing distance from one location to another

any two

(b) (i) Use the diagram below to obtain the precise length of the wooden block.

(3marks)

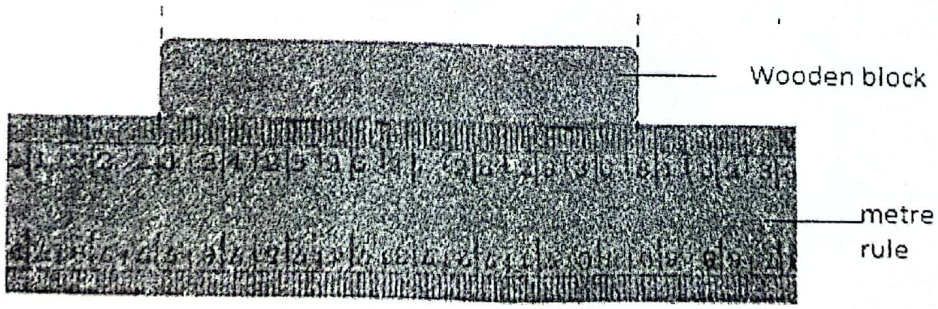



Fig. 4.0

Length of wood = 30.7 − 23.0 ✓
= 7.7 cm ✓✓ recorded to 1 d.p.

(ii) storeyed building has a ground floor and 3 other floors. To move from one floor to another, one has to climb 12 steps each of length 20cm. What is the height of the building **in metres**. (4marks)

Total number of steps = (12×4) ✓ = 48 steps ✓ (02)

Total height = $48 \times 20 = 960$ cm ✓

So height of the building h = ~~9.2m~~ 9.6m ✓ 02

5. (a) Ankunda intends to use a cup to sell milk. How can you help her establish the exact volume of her cup so that she sells milk. (2marks)

She needs to pour the cup of milk into the measuring cylinder which has a scale that be used to measure the exact volume of milk. (02)

(b) In an experiment to determine the volume an irregular object e.g. a stone. The apparatus was set up as shown in figure 5.0 below:

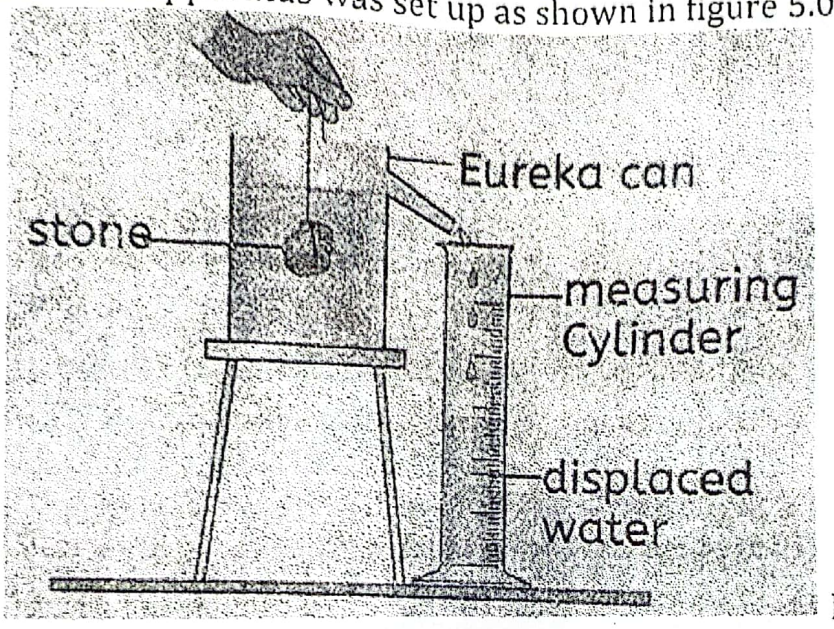



Fig 5.0

Design the procedure that will enable you obtain the exact volume of the stone based on the above setup. (6marks)

- Pour water in an overflow can until it just drips out of the spout
- wait until no more drops drip
- Place a measuring cylinder below the spout
- Gently lower the stone using the thread into the water in the overflow can
- Read and record the volume of the displaced water, V that has been collected into the measuring cylinder
- Volume of the stone = volume of displaced liquid

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