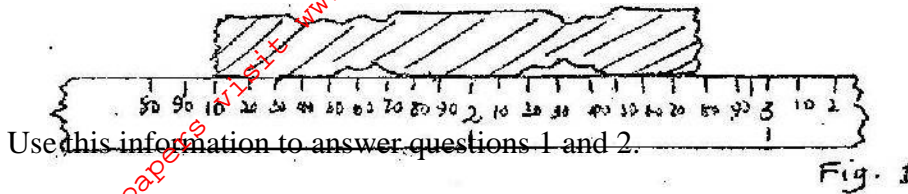


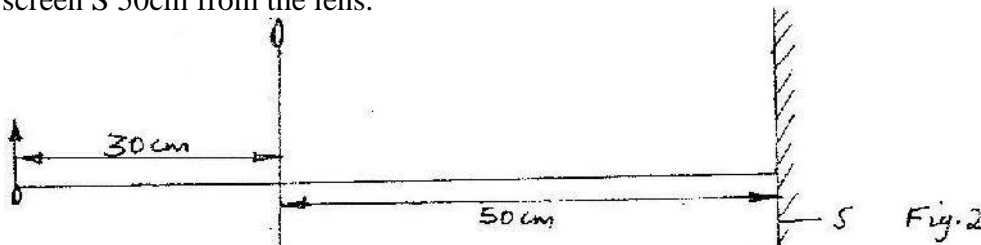
## PHYSICS PAPER 232/1 K.C.S.E 1998

Acceleration due to gravity,  $g, = 10 \text{ ms}^{-2}$

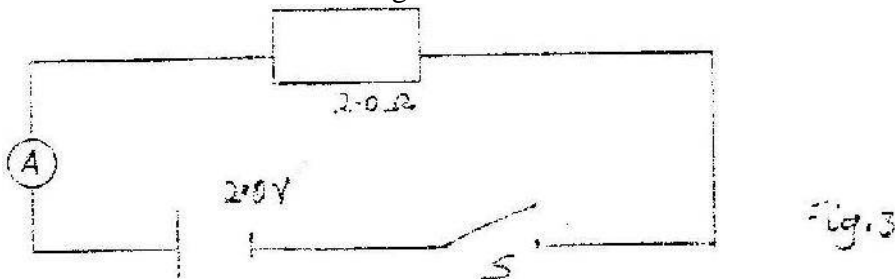
1. Figure 1 shows a fencing post whose length is being measured using a strip of a measuring tape.



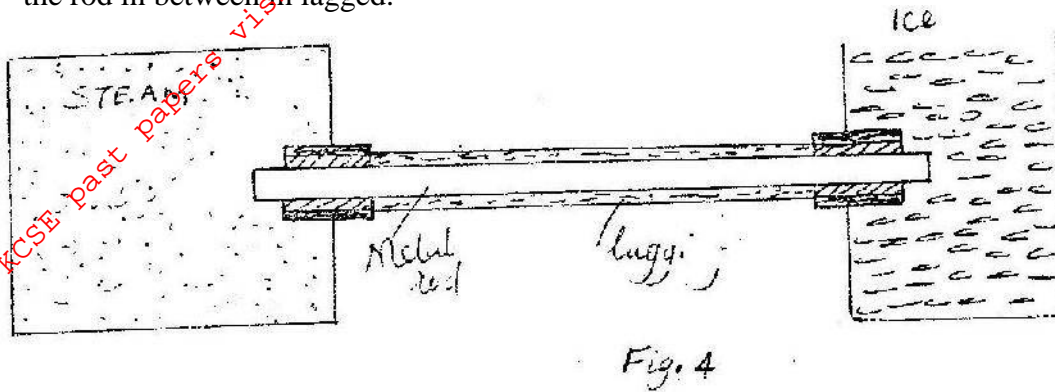
1. State the accuracy of the tape:
2. What is the length of the post?
3. A heating coil rated 1000 W takes 15 minutes to heat 20kg of a liquid from  $26^{\circ}\text{C}$  to  $42^{\circ}\text{C}$ . Determine the specific heat capacity of the liquid.
4. State one industrial use of X – rays
5. A metal pin was observed to float on the surface of pure water. However the pin sank when a few drops of soap solution were carefully added to the water. Explain his observation.
6. Figure 2 draw to scale shows a lens L1 placed 30cm from an object O. The image is formed on the screen S 50cm from the lens.



7. State one advantage of fitting wide tyres on a vehicle that moves on earth roads.
8. The primary coils of a transformer has 2000 turns and carries a current of 3A. If the secondary coil is designed to carry a current of 30A, calculate the maximum number of turns in the secondary coil.
9. Water of mass 3kg at a temperature of  $90^{\circ}\text{C}$  is allowed to cool for 10 minutes. State tow factors other than humidity, that determine the final temperature.
10. A car battery requires topping up with distilled water occasionally. Explain why this is necessary and why distilled water is used.
11. The internal resistance of the cell, E in figure 3 is 0.5 ohms. Determine the ammeter reading when the switch S is closed.



12. The activity of a radioactive substance, initially at 400 counts per second reduces to 50 counts per second in 72 minutes. Determine the half – life of the substance.
13. State the reason why a voltmeter of high resistance is more accurate in measuring potential differences, that one of low resistance.
14. Explain how hammering demagnetizes a magnet
15. cc
16. In figure 4 one end of a metal rod is placed in steam and the other end in melting ice. The length of the rod in between is lagged.

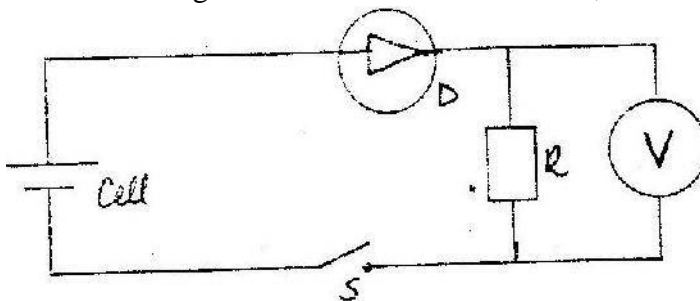


State two factors that determine the rate at which ice melts.

17. Calculate the length of a wire required to make a resistor of 0.5 ohms, if the resistivity of the material is  $4.9 \times 10^{-7} \Omega \text{ m}$  and the cross sectional area is  $2.0 \times 10^{-6} \text{ m}^2$
18. State the reason why the amplitude of a simple pendulum decreases with time.
19. State two differences between the cathode ray tube (CRT) of a TV and the cathode ray oscilloscope (CRO)
20. Table 1 carries information on the type of radiation, detector and use for some of the electromagnetic radiations. Fill in the blanks.

Type of radiation	Detector	Used
Microwave	Microwave receiver	
Visible light		Seeing / vision

21. In the circuit in fig 5 when the switch S is closed, the voltmeter shows a reading.



When the cell terminals are reversed and the switch is closed, the voltmeter reading is zero. Explain these observations.

22. A body of mass M is allowed to slide down an inclined plane. State two factors that affect its final velocity at the bottom of the incline.
23. Cleavage in crystals is possible in certain directions only. Explain this observation.
24. John carried a uniform post of mass 20kg horizontally on his shoulder as shown in fig 6. He placed the post on his shoulder such that the centre of gravity of the pole is 1.0m behind him. He balanced the post by applying a downward force F at a point 0.5m on the part of the post in front of him.

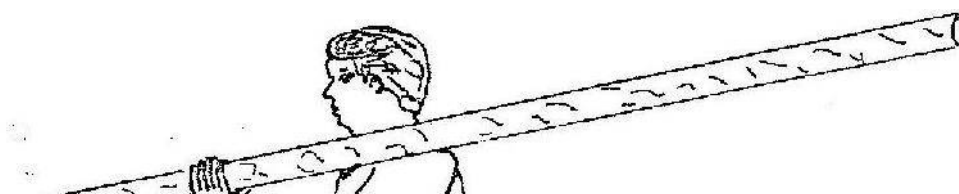


Fig 6

Determine the value of the force F.

25. Fig 7 shows a graph of pressure P, against volume, V, for a fixed mass of gas at constant temperature.

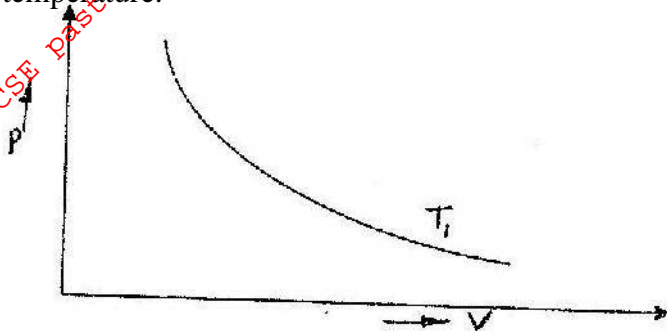


Fig 7

Sketch on the same axes a graph for the same mass of gas with a temperature  $T_2$  lower than  $T_1$

26. State two factors that would raise the boiling point of water to above  $100^{\circ}\text{C}$
27. During total eclipse of the sun, both light and heat are observed to disappear simultaneously. Explain the observation.
28. What determines the quality of a musical note?
29. Fig. 8 shows a car of mass M moving along a curved part of the road with a constant speed.

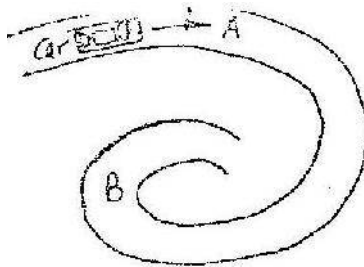


Fig 8

Explain the fact that the car is more likely to slide at B than at A if the speed is not changed.

30. Fig 9 shows a Bunsen burner.

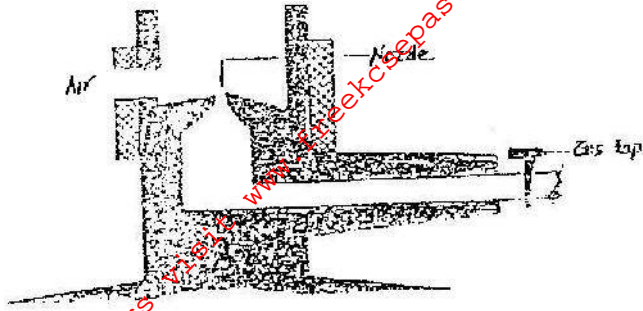


Fig. 9

Use Bernoulli's principle to explain how air is drawn into the burner, when, the gas tap is opened.

31. Fig 10 shows a fire alarm circuit.

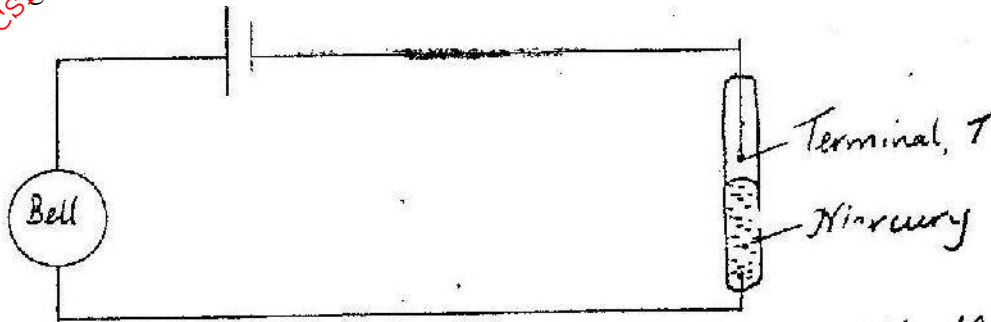


Fig. 10

Explain how the alarm functions.

32. Fig 11 shows a double slit placed in front of a source, S of waves, a director D is placed beyond the slits, such that its position can be adjusted along the line XY.

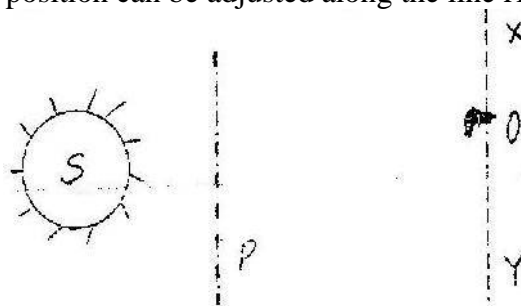


Fig. 11

State with a reason, what the detector records along XY.

33. What is meant by virtual image?

34. Fig 12 shows a body of weight 50N placed on a surface which is inclined at an angle of  $30^\circ$  to the horizontal. The body experiences a maximum frictional force of 29N with the surface.

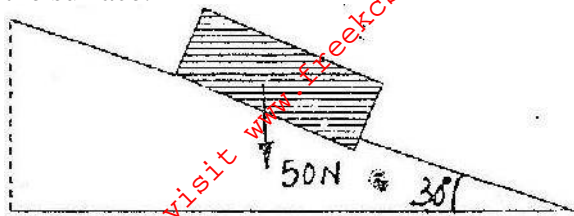


Fig 12

Determine the force required to move the body, up the inclined with constant velocity.

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