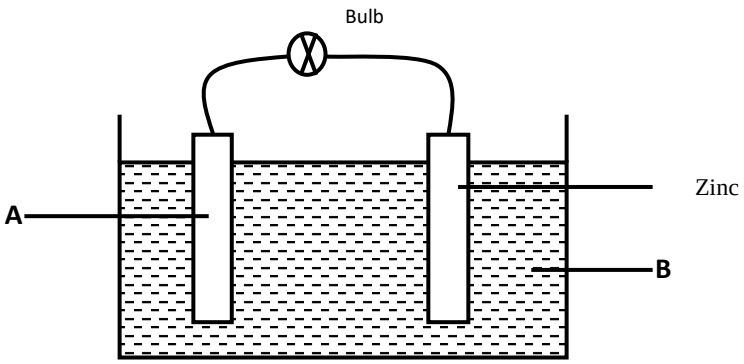
FORM ONE PHYSICS TOPICAL QUESTION

CELLS AND SIMPLE CIRCUITS QUESTIONS

1. A form two student from Kimomo Secondary School found his dry cells leaking on removing from his torch. What would be the possible cause of the leakage (2 marks)

2. **Figure 3** shows a set up of a simple cell.

Figure 3

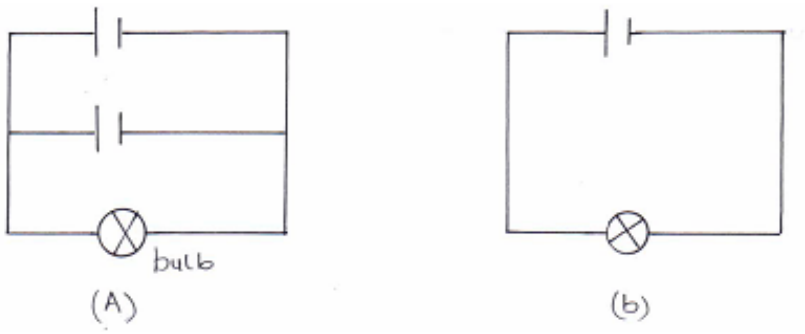


(a) Name the electrode **A** and electrolyte **B**. (2marks)
(b) State **two** reasons why the bulb goes off a short time. (2marks)
(c) Give **one** method of minimizing the defect that occurs in plate **A**. (1mark)

3. State one advantage of a lead acid accumulator over nickel-iron accumulator. (1 mark)

4. State one defect of a simple cell and explain how it can be minimized. (2 marks)

5. Figure 2 below shows two identical bulbs connected in two circuits. The cells are of the same e.m.f.



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Compare the brightness of the bulbs in (a) and (b). (1mk)

6. Describe two defects in simple cells and ways in which they can be minimized. (2mk)

7. State the purpose of manganese (IV) oxide in a dry cell. (1 mark)

8. Figure 1 shows a circuit contains a battery of cells V, a 3A fuse, F, a switch S, and two identical lamps L_1 and L_2. A current of 2A flows through lamp L_2 when the switch is open.

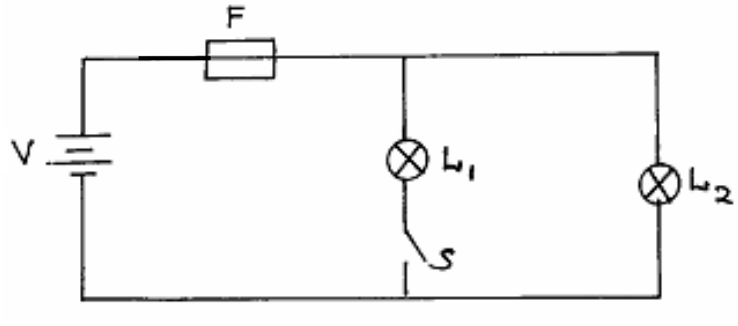


Figure 1

Explain why the fuse may blow when the switch is closed. (2mks)

9. State the major difference between a dry cell and a wet cell. (1mk)

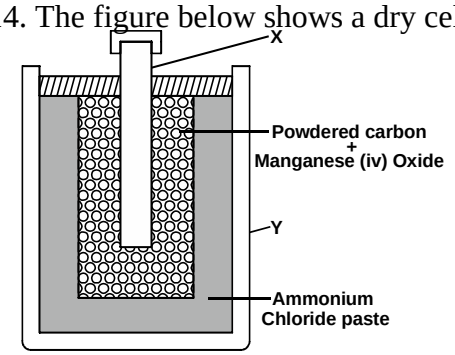
10. Give a reason why it is necessary to leave the caps of the cells open when charging an accumulator. (1 Mk)

11. Explain why the e.m.f of a dry cell drops if a large current is drawn for a short time and then recovers if allowed to rest. (2marks)

12. In large current circuits large resistors in parallel are preferred to low resistors in series. Explain. (2mks)

13. Explain how polarization reduce current in a simple cell. (1 mark)

14. The figure below shows a dry cell.



Name the parts X and Y
State the function of the powdered carbon and manganese (IV) oxide. (2 marks)

15. A student making a simple cell in the laboratory realised that the current quickly falls to a very small value.
State a possible cause for this. (1 mark)

16. State how polarization is reduced in wet Leclanche cell (1 mark)

17. Give a reason why it is not advisable to smoke a cigarette near a charging battery. (1 mark)

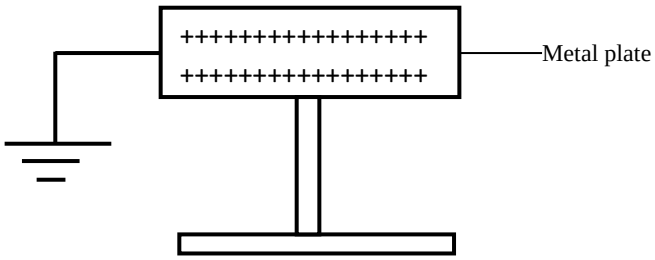
18. A certain car battery is rated 30Ah. Determine the amount of current it can supply in 10 minutes.

19. How much current is taken by a bulb rated 100w, 250V. (2 marks)

20.

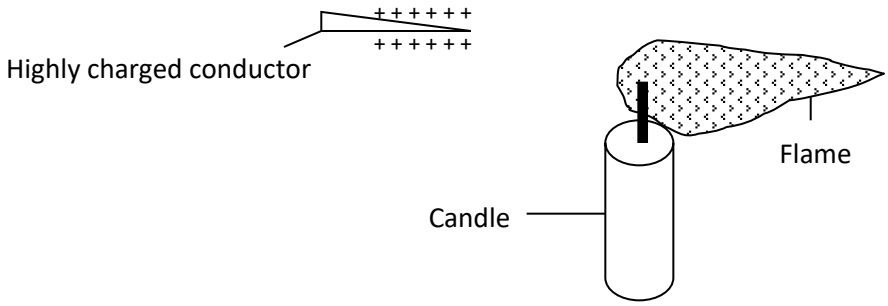
ELECTROSTATICS QUESTIONS

21. The figure 3 below shows a positively charged metal plate with an earthing connection. Using an arrow, show the direction of charges through the earth connection and explain the final charge of the plate. (2 marks)



22. Give a reason why a candle flame is blown when a highly charged conductor is brought close to it as shown in **Figure 9**. (2marks)

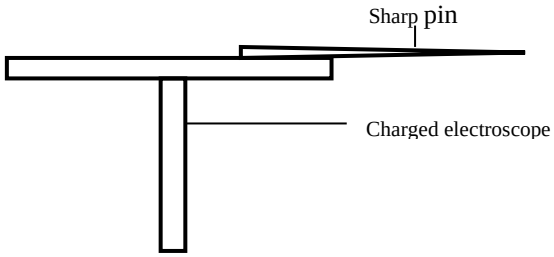
Figure 9



23. A negatively charged polythene rod is placed on a pan of electric balance. State and explain what happens to the balance reading if a positively charged glass rod is brought closer to the polythene rod. (2 marks)

24. In **figure 15** below, a sharp pin is fixed on a cap of a leaf of electroscope. The electroscope is highly charged and then left for some time.

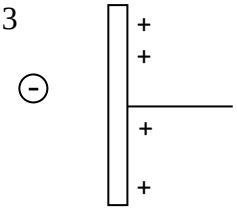
Fig. 15



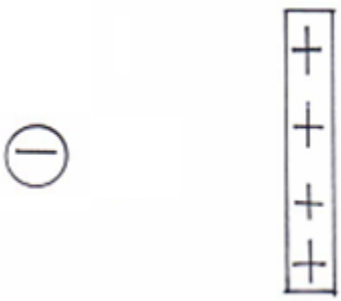
State and explain the observation made after sometime. (2marks)

25. Draw the electric field pattern in figure 3 (3 marks)

Figure 3



26. Figure 1 below shows a negatively charged particle close to a positively charged plate.



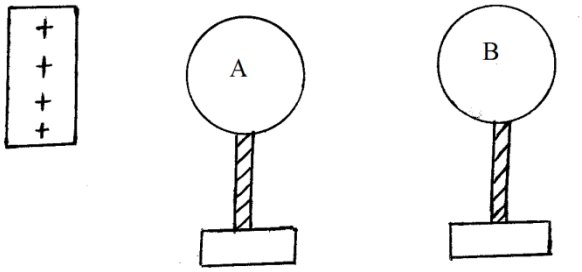
Draw the electric field pattern. (2mks)

27. Describe how you would charge a gold leaf electroscope by induction method
(2mks

28. It is observed that when a rod A is brought near the cap of a negatively charged electroscope, the divergence of the leaf decreases. State **two** deductions that can be made about rod A from this observation. (2 marks)

29. A positively charged rod is brought close to the cap of a gold leaf electroscope, it is observed that the gold leaf diverged further. Explain this observation.
(2mks)

30. A positively charged rod is brought close to two spheres A and B, held by insulating handles as shown below.



Indicate the charge on A and B (2 marks)

31. Figure 5 shows two charged identical conducting spheres on insulating stands. Each cross represents a charge. The spheres are briefly brought into contact.

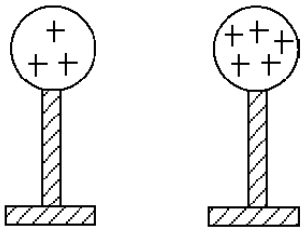


Figure 5

Sketch in the space provided the diagrams of the spheres showing charge distribution after separating. (2mks)

32. An uncharged metal rod brought close but not touching the cap of a charged electroscope causes a decrease in the divergence of the leaf. Explain. (1 mark)

33. When the cup of an uncharged electroscope is irradiated with light of high frequency the leaf of the electroscope rises. Explain this observation. (3 marks)

34. Explain with the aid of diagrams how you can charge an electroscope negatively by induction method. (3 marks)

35. i) State the basic law of electrostatics. (1 mark)

ii) In testing for the sign of charge on a body, explain the behaviour of a positively charged electroscope when charged bodies are brought closer to the electroscope. (2 marks)

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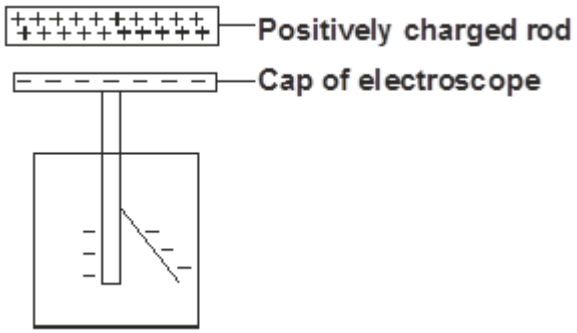
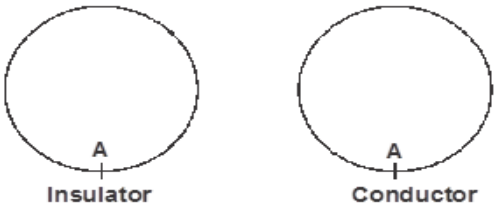
36. The figure below shows a highly positively charged rod being moved slowly downwards towards the cap of a negatively charged leaf electroscope. It is observed that the leaf initially falls then rises.



Explain this observation. (2 marks)

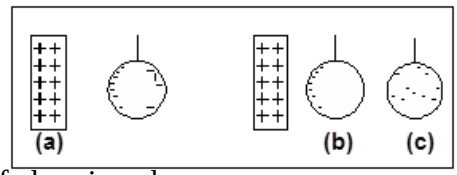
37. The figure below shows two spherical materials, one an insulation conductor and the other a conductor. Negative charges are introduced at point A in each case.



On the same figure indicate the final position of the charges. Explain your answer. (2 marks)

38. Figure 1 show a method used to charge conductors. The procedure follows steps a, b and c

Fig



i)State the method of charging above. (1 mark)

ii) Explain what happens in step (b) above. (1 mark)

QUESTIONS ON FORCE

1. The figure 2 below shows a match stick floating on the surface of water in a basin,

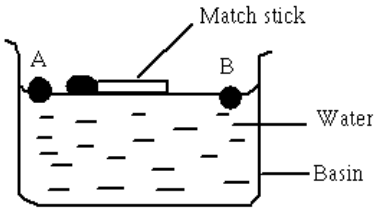
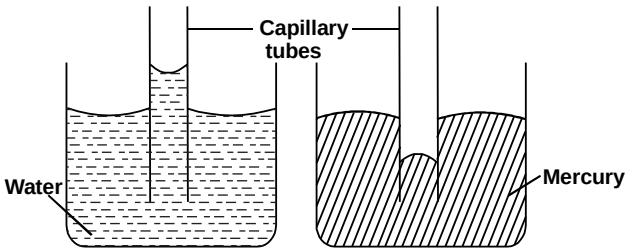


Fig. 2

When a drop of soap solution was carefully added to the water at A, the match stick is observed to move in a certain direction. State the direction of this match using A and B and explain this observation.(2mks)

2. The figures a and b below shows capillary tubes inserted in water and mercury respectively.



(a) (b)

It is observed that in water, the Meniscus in the capillary tube is higher than in the beaker, while in mercury, the Meniscus in the capillary tube is lower than the meniscus in the beaker. Explain these observations. (2 marks)

THERMAL EXPANSION AND HEAT TRANSFER QUESTIONS

Specific Objectives

- Temperature
- Thermometers:
  - liquid - in - glass,
  - clinical,
  - six's maximum and minim
- Expansion of solids, liquids and gases
- Effects of expansion and contraction
- Unusual expansion of water (Anomalous expansion)

- Applications of thermal expansion include Bimetallic strip

HEAT TRANSFER

Specific Objectives

- Heat and temperature
- Modes of heat transfer
- Factors affecting heat transfer (experimental treatment required)
- Applications of heat transfer on:
  - Vacuum flask,
  - Domestic hot-water system,
  - Solar concentrators

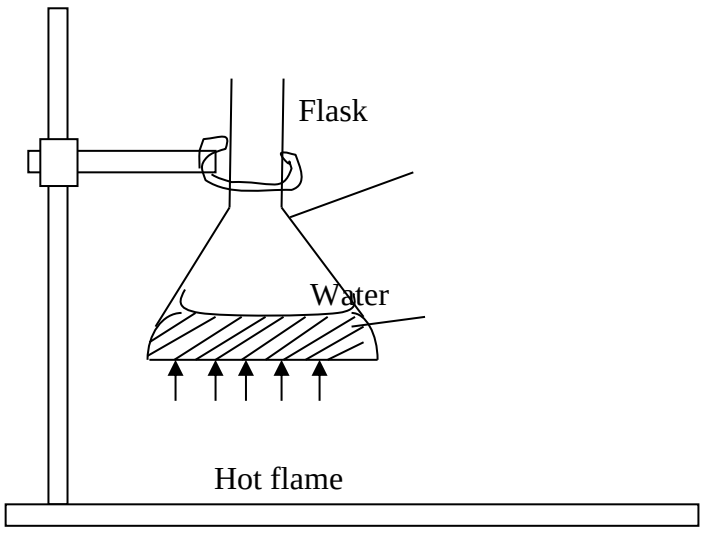
1. An electric kettle with shiny outer surface is more efficient than one with a dull outer surface, give a reason for this. (1 mark)

2. (a) A student obtained ice at 0^{o}Cfrom a refrigerator and placed it in a beaker on a bench. After 4 minutes, the temperature rose to 4^{o}C. State the changes that would be observed in the water in terms of;
   (i) density (1 mark)
   (ii) mass (1 mark)
   (ii) volume (1 mark)

3. A faulty thermometer reads 2^{o}C when dipped in ice at 0^{o}C and 95^{o}C when dipped in steam at 100^{o}C. What would this thermometer read if placed in water at room temperature at 18^{o}C? (3 marks)

4. In a clinical thermometer state how the thermometer can be made. (1marks)
   a) Move sensitive
   b) Quick acting

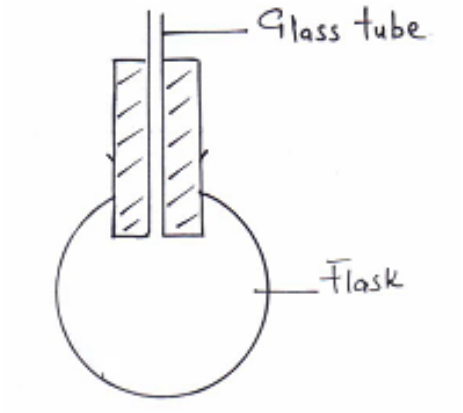
5. The figure below shows a flat bottomed flask containing some water. It is heated directly with a very hot flame



Explain why the flask is likely to crack
(2marks)

6. In a faulty mercury-in-glass thermometer it was found that the mercury level stands at 2 cm mark in the tube at 0^0C and 20cm when in steam above boiling point water at normal atmospheric pressure. Calculate the temperature when the mercury stands at 13cm mark. (2 marks)

7. Figure 2 shows a flask filled with water. The flask is fitted with a cork through which a tube is inserted. When the flask is cooled, the water level rises slightly, and then falls steadily.



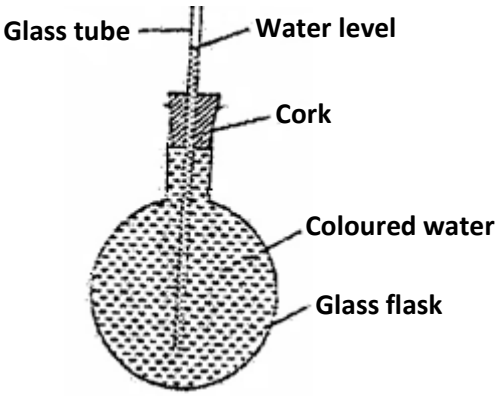
Explain this observation. (3mks)

8. Explain why copper is a better conductor of heat than iron. (1mk)

9. A faulty thermometer reads 2^0C when dipped in ice a 0^0C and 95^0C when dipped in steam at 100^0C. what would this thermometer red if placed in water at room temperature of 18^0C? (3 marks)

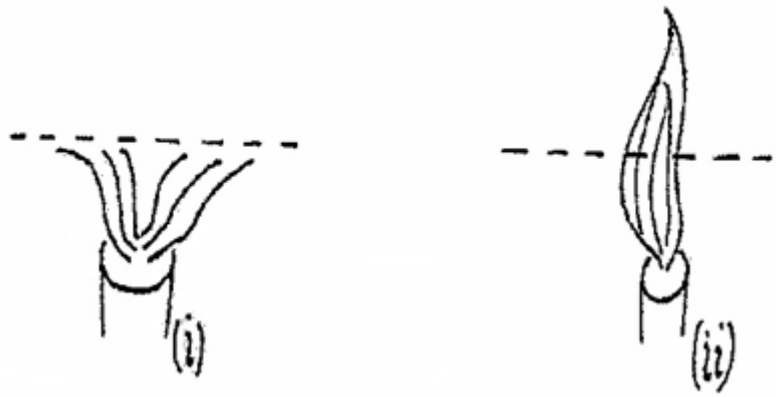
10. Sauce pans have a plastic or wooden handles. It is observed that in the morning the pan feels colder than the wooden handle. Explain the difference in this observation. (2 marks)

11. In the set up shown below, it is observed that the level of the water initially rises before starting to drop when the flask is dipped in ice cold water.



Explain this observation. (2mks)

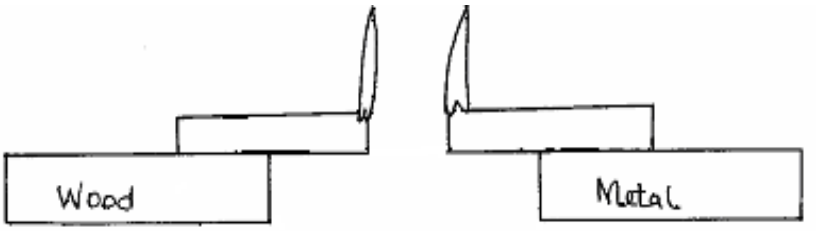
12. When a Bunsen burner is lit below wire gauze, it is noted that the flame initially burns below the gauze as shown in Figure (i). After sometime, the flame burns below as well as above the gauze as shown in Figure (ii).



Explain this observation.

13. Explain why a thick glass is more likely to break when hot water is poured on it than thin glass. (2mks)

14. The figure below shows two identical burning splints. Placed on wood and metal blocks respectively it was observed that when the flame reached the edge of the metal block the splint was extinguished while the other on the wooden block continued to burn. Explain this observation. (1mk)



15. Give a reason why water is not a suitable liquid for use in a barometer. (2mks)

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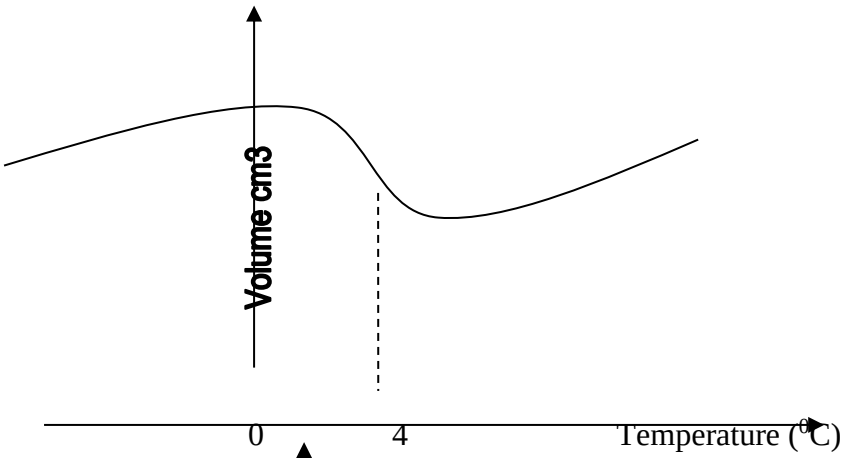
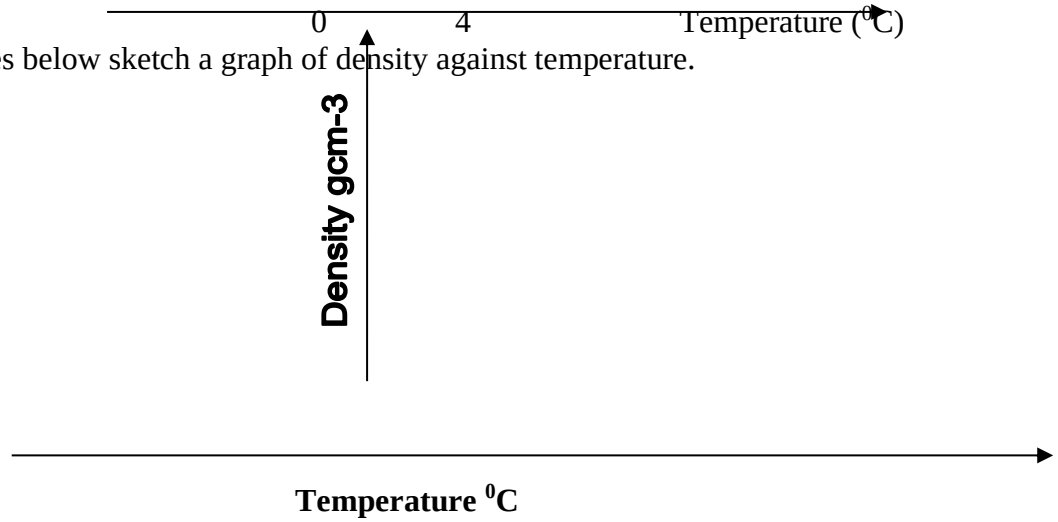
16. (a) State **two** factors that affects conductivity in metals. (2mks)

(b) You are provided with a metallic ball, a metallic ring and a source of heat. Describe how you would show that solids expand.
(3mks)

(c) Figure below shows how water expands from lower temperatures.



On the axes below sketch a graph of density against temperature.



(d) Explain briefly why concrete walls are reinforced with steel and not other metals. (1mk)

17. Explain how heat loss by ;

(i) Radiation is minimized in a vacuum flask. (1 Mk

(ii) Conduction is minimized in a vacuum flask. (1 Mk)

18. Explain why it is sometimes easier to remove a metallic lid from a tightly closed glass jar after warming it under hot running water.
(2mks)

19. Heat transfer by radiation is faster than heat transfer by conduction. Explain. (2mks)

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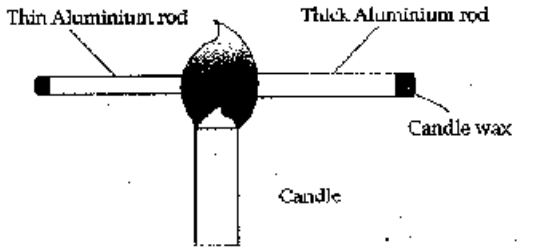
20. Some candle wax is placed at one end of each of the aluminium rods with different thickness. The rods are than heated in a candle flame as shown in the figure below.



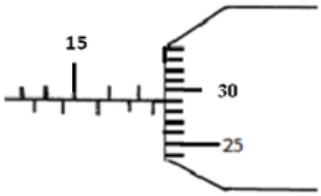
A candle heating aluminium with different thickness

State and explain the observation made. (2mks)

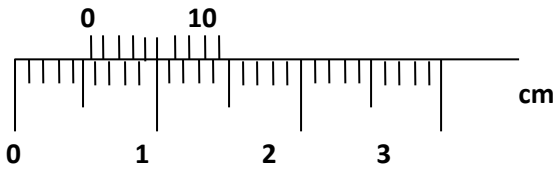
MEASUREMENTS QUESTIONS

4. A micrometer screw gauge has a zero error of -0.02mm. It is used to measure the diameter of a wire. If the actual diameter of the wire is 0.28mm. Draw the micrometer screw gauge showing the diameter of the wire. (2 marks)

5. The diagram below shows a micrometer screw gauge. What is the reading in SI units? (2 marks)



6. What is the reading on the Vernier caliper shown in figure 1 below? (1mark)



7. State the name of the instrument used to take the following readings;
   (i) 10 kg (1 mark)
   (ii) 0.00245m (1 mark)

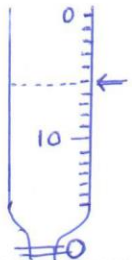
8. A micrometer screw gauge which had an error of +0.02mm was used to measure the diameter of a spherical marble. If the actual diameter was 3.67mm, draw a micrometer screw gauge showing its reading. (2 marks)

9. Figure 1 below shows a burette that was initially filled to 12ml with a liquid of density 0.8g/cm³.

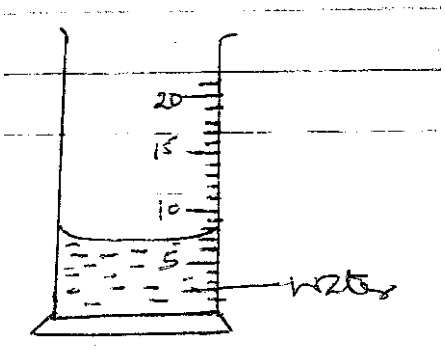
Figure 1

The liquid is allowed to run out for some time. If the volume of liquid removed from the burette has a mass of 14g, determine the final reading on the burette. (3mks)

10. The figure below shows a burette partly filled with a liquid. The burette was initially full to the mark 0. If the quantity of the liquid removed has a mass of 20g, determine the density of the liquid. (2mks)



11. The figure below shows a measuring cylinder with some water in it.



A metal cube of mass 18g is submerged in it. Given that the density of the metal is 4.167 g/cm^3, indicate the new level of the liquid. (2 mks)

8. Figure 1 shows a measuring cylinder, which contains water initially at level A. A solid of mass 0.32g is immersed in the water, the level rises to B.

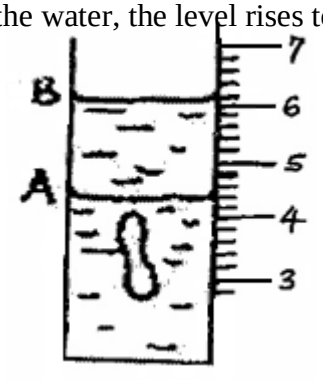


Figure 1

Determine the density of the solid. (Give your answer to 3 significant figures).
(2mks)

9. The figure 2 below shows part of micrometer screw gauge with 50 divisions on the thimble scale. Complete the diagram to show a reading of 5.73mm.
(1mk)

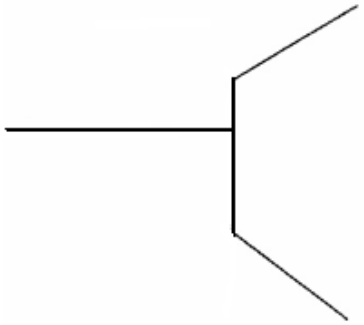
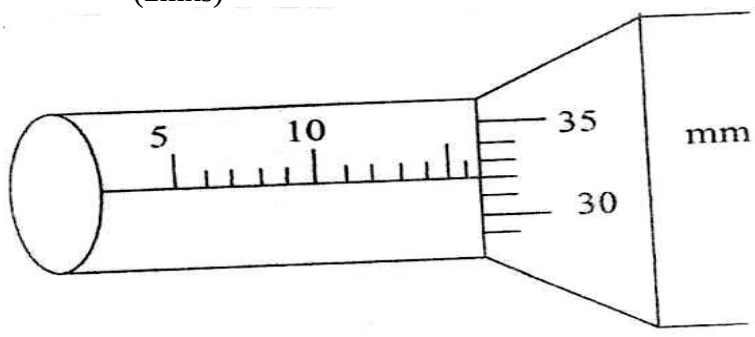


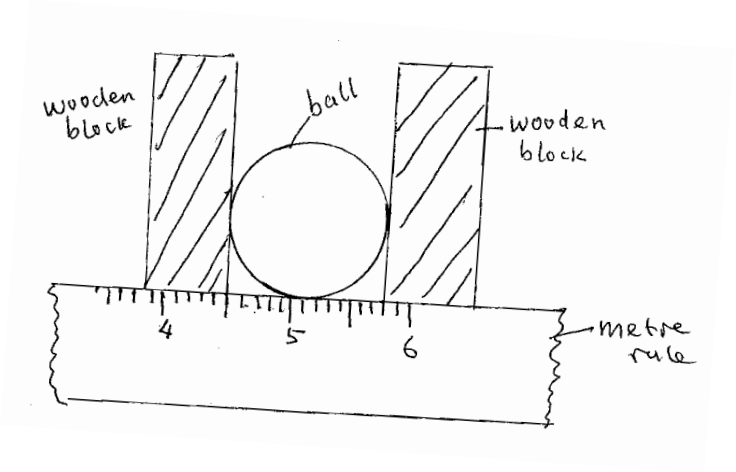
Figure 2

10. . χcm of substance A of density 800kg/m^3 is mixed with 1000cm^3 of water of density 1000kg/m^3. The density of the mixture is then 0.96/cm^3. Determine the value of χ (3mks)

11. Figure 1 below shows a section of a micrometer screw gauge used by a student to measure the diameter of a wire. Determine the cross-sectional area of the wire.
(2mks)

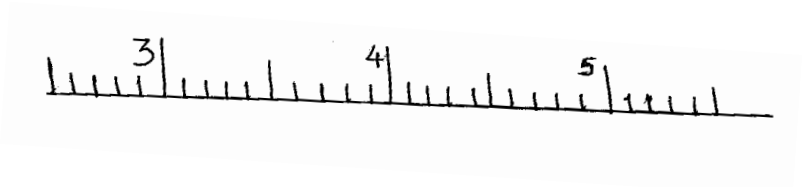


12. The figure below shows a spherical ball placed between 2 wooden blocks and a metre rule.



What is the volume of the ball? (3 Mks)

13. The figure below shows part of the main scale of vernier valipers.



Insert the vernier scale to the main scale, to show a reading of 3.62 C.M (1 Mk)

14. In the space below give a sketch of a closed micrometer screw gauge showing an error of +0.02. (1mk)

15. The figure 1 below shows a measuring cylinder which contains water initially at level A. When a solid of weight 0.3N was immersed in the water, level rose to B.

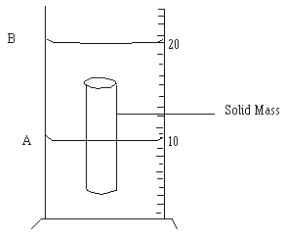
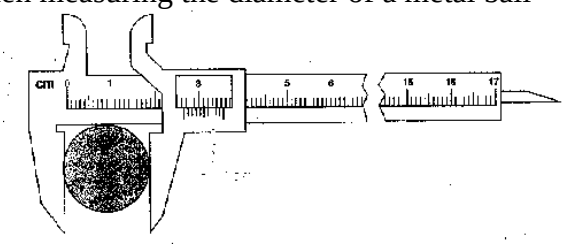


Fig. 1

Use this information to answer the question that follow.

Determine the density of the solid mass giving your answer in g/cm^3. (3mks)

16. The figure below shows the reading obtained on a vernier caliper that has a zero error of -0.12cm, when measuring the diameter of a metal ball



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Determine the diameter of a metal ball.

17. The figure 1 below shows a micrometer screw gauge that has a zero error of +0.02. State the actual reading of the micrometer screw gauge. (1 mark)

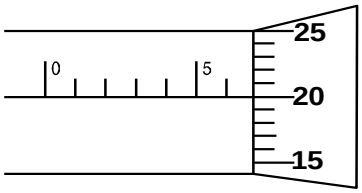
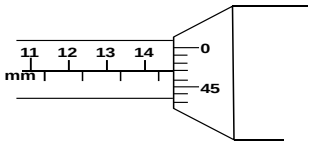


Fig 1

18. Atomic physics is a branch of physics. State what it deals with. (1 mark)

19. (a) Draw a vernier calliper to show a reading of 7.36cm (1 mark)
(a) What is the micrometer screw gauge reading in the figure shown below. (1 mark)



20. State the name of the instrument used to take the following readings:
i) 0.035m (1 mark)
ii)0.00245m (1 mark)

PARTICULATE NATURE OF MATTER QUESTIONS

Specific Objectives

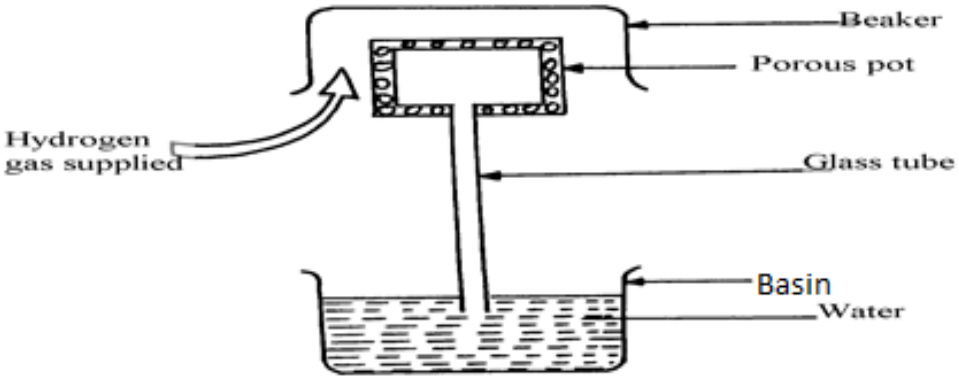
- Experiments to show that matter is made up of tiny particles (e.g cutting papers into small pieces dilution experiments
- Brownian motion
- States of matter
- Diffusion (Graham's law not required)

1. Diffusion in gases is faster than in liquids; state two reasons why this is so. (2 marks)

2. State two factors which affect the rate of diffusion in gases (2marks)

3. Explain the reason why a dropping dust particle in a still room does not trace a straight vertical path. (1mk)

4. The figure below shows an arrangement of demonstrate diffusion through solids.

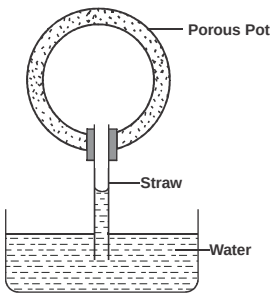


The hydrogen gas is supplied for sometimes then stopped and the beaker removed. State and explain what is likely t be observed when the hydrogen gas supply is stopped. (3 marks)

5. Seen through a hand lens pollen grains particles in water move about randomly. Explain this observation. (1mk)

6. In terms of intermolecular forces, explain the difference between liquid and gaseous state.
7. Explain the cause of random motion of smoke particles as observed in Brownian motion experiment using a smoke cell.
(1 mark)
8. A bottle containing a smelling gas is opened at the front bench of a classroom. State the reason why the gas is detected throughout the room. (1 mark)

9. In figure 2, a porous pot with a straw connected to it was filled with hydrogen gas to a pressure equal to atmospheric pressure. The pot was inverted such that the straw was immersed in water as shown.



The water was found to soon rise up the straw to a great height. Explain this observation. (3 marks)

10. Using particulate nature of matter, explain why a solid expands when heated? (2 marks)

11. Dust particles in air appear to move randomly, explain this observation. (2 marks)

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PRESSURE QUESTIONS

Specific Objectives

- Definition of pressure
- Pressure in solids
- Factors affecting pressure in fluid (Experimental treatment required)
- Derivation of P = rgh
- Atmospheric pressure
- Simple mercury barometer, manometers
- Applications of pressure: drinking straw, syringe, siphon, hydraulic press, hydraulic brakes, bicycle pump, force pump, lift pump

12. Air is trapped in a thin capillary tube by a thread of mercury 5cm long as shown in figure 4.

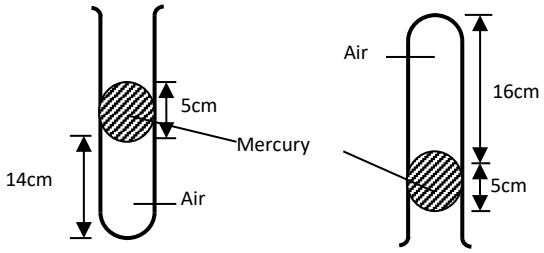
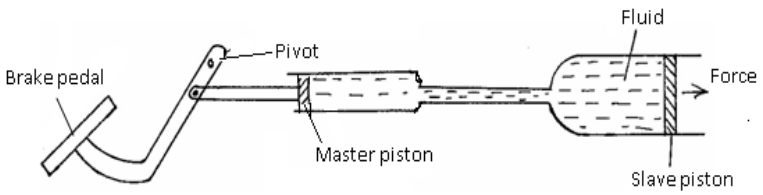


Figure 4

Use the information in figure 6 to calculate the value of the value of the atmospheric pressure in mmHg (3 marks)

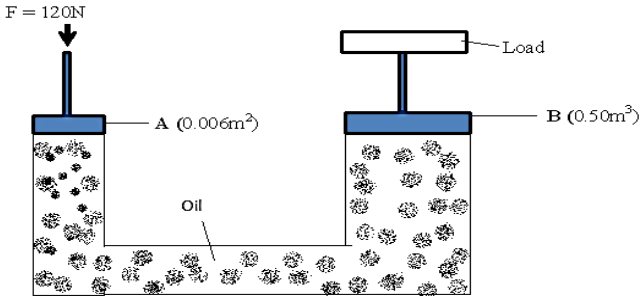
13. The diagram below shows a braking system.



Why is the master piston, made smaller than the slave piston? (1 mark

3. (a) Give reason why ink is most likely to ooze out of a pen when one is up in an airplane. (1mark)

(b) The figure below is a simple hydraulic machine used to raise heavy loads.



Calculate;

(i) The pressure exerted on the oil by the force applied at A (2marks)

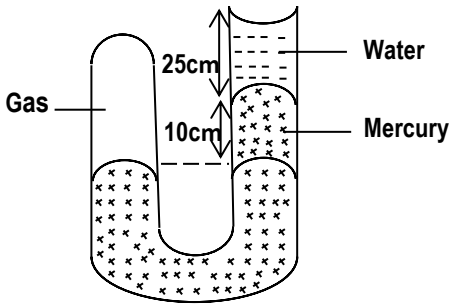
(ii) The load raised at B (2marks)

(iii) Give two properties which make the oil suitable for use in this machine (2marks)

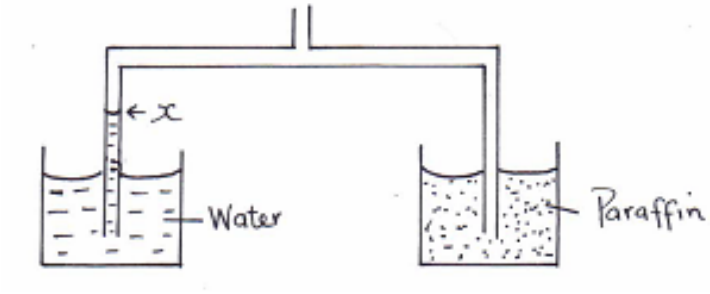
(c) The height of a mountain is 1360m. The barometer reading at the base of the mountain is 74cmHg. Given that the densities of mercury and air are 13,600Kgm^{-3} and 1.25Kgm^{-3} respectively, determine the barometer reading at the top of the mountain. (3 marks)

4. The figure below shows a U-tube manometer containing a gas, mercury and water. Calculate the gas pressure acting on the mercury. (Take atmospheric pressure to be 1.05 x 10^5 pa, density of mercury and water to be 13600kg/m^{3}and 1000kg/m^3 respectively).

(3mks)

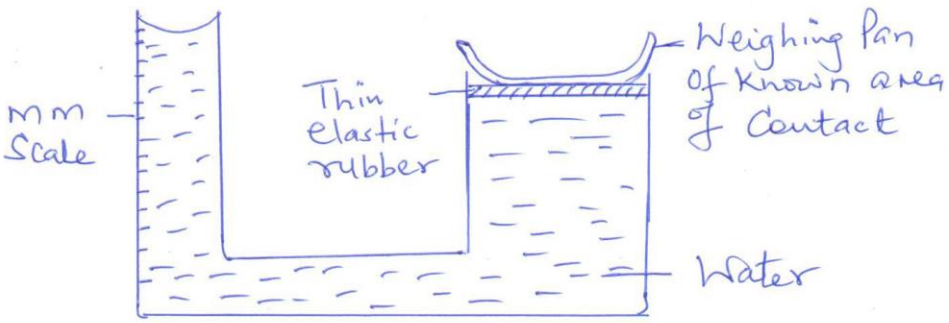


5. A vacuum pump was used to pump out air from the glass tube immersed in liquids as shown below.



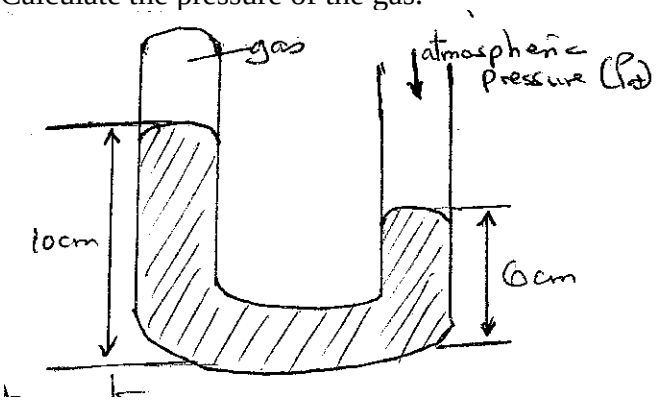
After sometime the level of water rose to position X. Mark Y the corresponding position for the paraffin level. Give a reason for your answer. (2mks)

6. The figure below shows a simple instrument designed by a student for weighing objects.

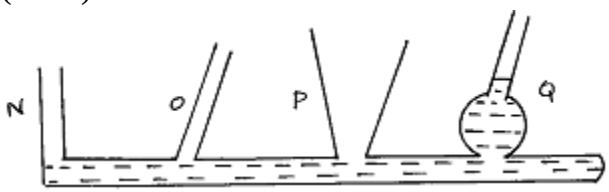


a) State what happens if one places an item on the weighing pan. (1 mark)
b) State two properties of water that make it suitable for this purpose. (2 marks)

7. Figure below shows a u-tube upon which a gas has been enclosed on one end with mercury in it. Calculate the pressure of the gas.

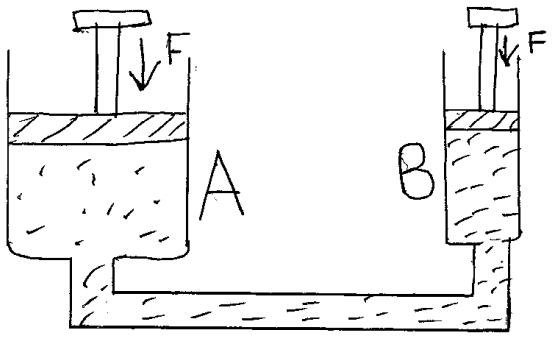


8. The figure below shows water level in limb Q of a glass tube. Indicate the corresponding water levels in limb N, O and P. Explain your answer.
(2mks)



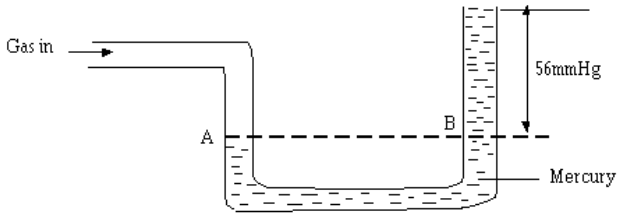
9. The barometric height in a town is 65cmHg. Given that the standard atmospheric pressure is 76cmHg and the density of mercury is 13600kg/m^3, determine the altitude of the town. (Density of air is 1.25kg/m^3) (2mks)

10. The figure below shows two cylinders containing a liquid and connected with a tight – fitting flexible tube. The cylinders are fitted with air – tight pistons A and B as shown.



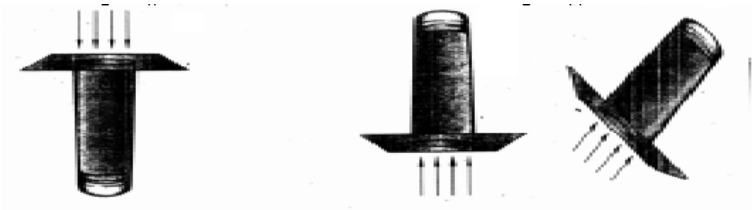
When equal forces, F are on the pistons as shown, what is observed? Explain the observation. (3 Mks)

11. Use the figure below to answer the questions that follow.



(i) What is the pressure resting on point A? (1mk)
(ii) What is the value of pressure difference in the instrument reading? (1mk)
(iii) If the atmosphere pressure is 760mm of mercury, what is the value of gas pressure? (2mks)

12. The figure below show a glass tumbler filled with water to the brim, a card made of manila paper is then placed on top of a glass tumbler as shown in figure 1.



Tumbler filled with water upright

Tumbler filled with water upside down

While supporting the card with one hand the glass tumbler is carefully inverted as shown in figure (ii). It is observed that the card remains in place without being support. Explain this observation. (2mks)

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13. In the figure 2, below, U-tube contains two immiscible liquids P and Q. If the density of Q is 900kg/m³ and that of P is 1200kg / m³, Calculate the height of liquid Q. (3 marks)

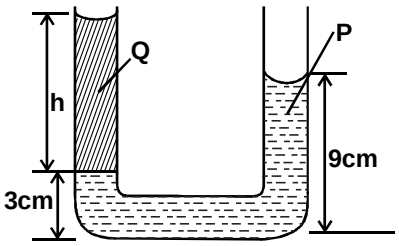


Fig 2

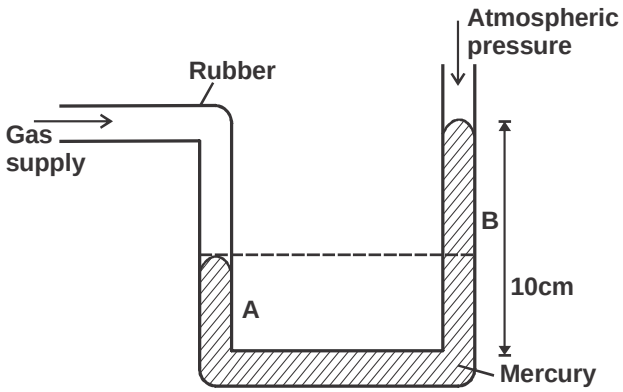
14. Pressure of a laboratory water tap in a school in Nakuru is 40,000 N/m². Calculate the height of the tank from which the water is supplied.(density of water = 1g/cm³, g=10N/kg)
(2 marks)

15. The barometric height in a town is 65cmHg. Given that the standard atmospheric pressure is 76cmHg and the density of mercury is 13600 kg/m³, determine the altitude of the town. (Density of air is 1.25kg/m³) (2 marks)

16. A student wearing sharp pointed heeled shoes is likely to damage a soft wooden floor. Explain
(2 marks)

17. State the reason why trucks carrying heavy loads are fitted with many tyres. (1 mark)

18. The figure below shows a manometer attached to a gas supply. If the atmospheric pressure is 103,360Pa, calculate the pressure of the gas supply. (Take density of mercury = 13,600kgm^{-3}) (3 marks)



19. A tall building has two barometers, one at the ground floor reading 750mmHg and the other at the top reading 748mmHg. Determine the height of the building. (2 marks)

20. a) State the principle of transmission of pressure in liquids. (1 mark)

b)A mass of 80kg is being lifted by a force F applied on the other piston of the machine as shown in figure 9.

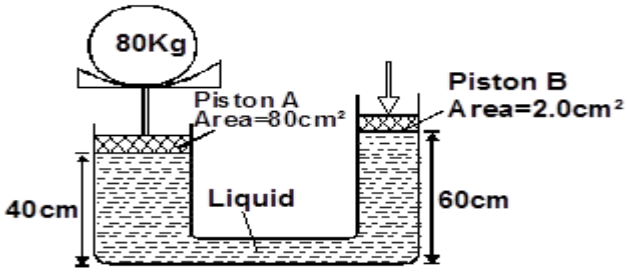


Fig 9

Determine the value of F needed to just lift the 80kg mass given the density of the liquid is 1.2g/cm³.(4 marks)

c) Give one reason why a lift pump raises water to heights less than 10m. (1 mark)

d) In an experiment, it was observed that soapy water placed on a wet smooth surface displaced the particles of non-soapy water. Sate and explain this observation. (2 marks)

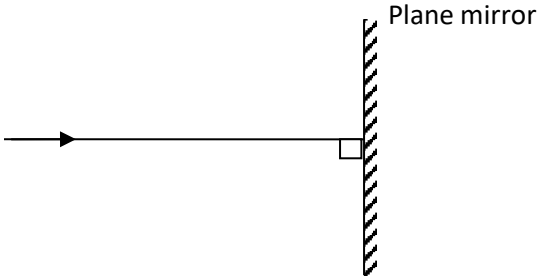
RECTILINEAR PROPAGATION OF LIGHT AND REFLECTION AT PLANE SURFACE

Specific Objectives

- Rectilinear propagation of light (experimental treatment required)
- Formation of shadows and eclipses (umbra and penumbra)
- Pin-hole camera image formation and magnification
- Laws of reflection
- Images formed by plane minors, ray diagrams, parallel and inclined mirrors
- Devices based on reflection: periscope, kaleidoscope
- Problems on pin-hole camera and mirrors inclined at an angle

1. **Figure 1** show a ray of light incident on a plane mirror.

Figure1



(a) On the diagram, indicate the direction of the reflected ray. (1mark)

(b) Give reason for the path shown above. (1mark)

2. State what happens to the image when one moves closer to the object when using a pinhole camera. (1mark)

3. **Figure 1** shows a ray of light XY striking the mirror CD held at an angle of 108^0 to mirror DE.

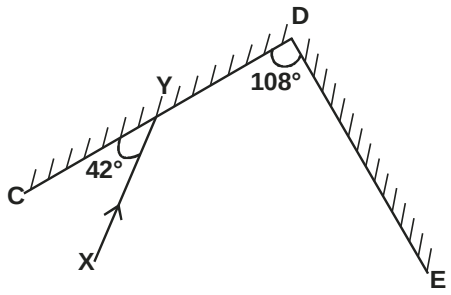


Fig 1

Complete the path of the ray XY and state the final angle of reflection. (2 marks)
Complete the path of the ray XY and state the final angle of reflection (3 marks)

4. **Figure 6** represents a pinhole camera.

Fig 6

Sketch rays to show the formation of an enlarged image in the camera. Label both the image and the object. (2 marks)

5. State one difference between an image formed by a pinhole camera and the viewed through a magnifying glass.
(1 mark)

6. State the property of light associated with formation of shadows.
(1mk)

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7. A ray of light makes an angle of 60° with a plane mirror as shown in Figure 1 below. The mirror is rotated through an angle of 20° about the point O in a clockwise direction.

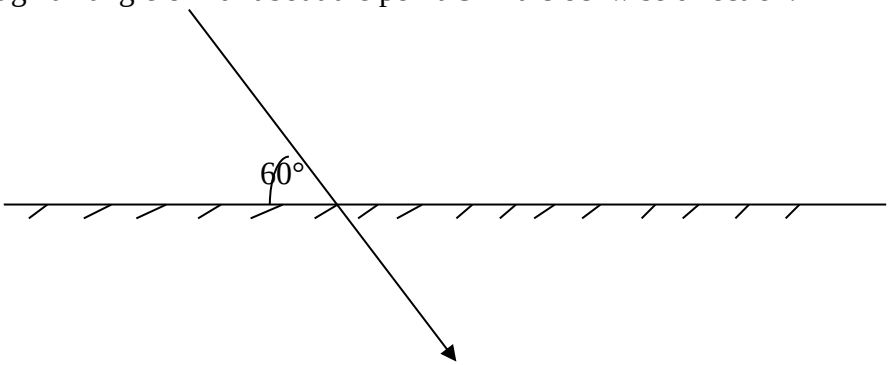


Figure 1

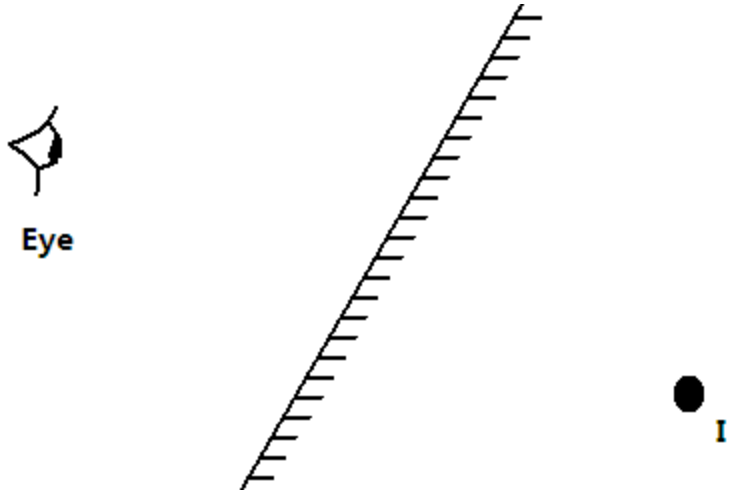
Determine the new angle of reflection.
(2mks)

8. State **one** property of light that a pinhole camera illustrates. (1 mark)

9. A plain sheet of paper and a plane mirror both reflect light yet only the plane mirror forms images. Explain why the paper cannot form images.
(2mks)

10. State two factors affecting the type of shadow formed by a fixed size object placed in front of a source of light. (2 Mks)

11. The figure below shows the image in front of a mirror M.



By ray diagram construction, locate the position of the object.
(2marks)

12. Figure 1 below shows an object in front of plane mirror.

Figure 1
Sketch image of object using mirror shown. (1mk)

13. The figure 1 below shows the image I behind a mirror M

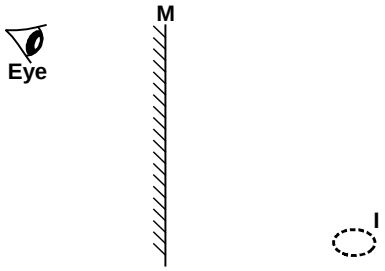
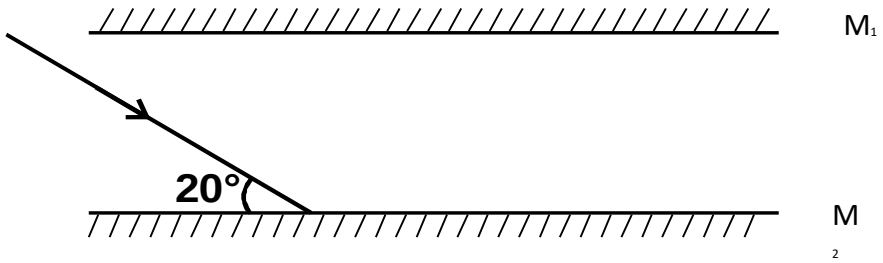


Fig 1
Using ray diagram construction, locate the position of the object. (2 marks)

14. State one differences between an image formed by a plane mirror and that observed through a pinhole camera.(1 mark)

15. The diagram below shows two parallel mirrors M_1 and M_2 and a ray of light being incident on one of the mirrors as shown. Trace the ray of light through the mirrors. (2 marks)



16. a) i) Figure 7 shows a ray of light incident on a plane mirror at O.

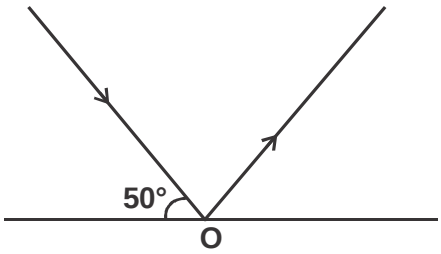


Figure 7

The mirror is rotated clockwise through angle 30° about an axis perpendicular to the paper and through O, determine the angle through which the reflected ray rotates. (2 marks)

ii) Find the number of images formed when an object is between two mirrors placed 45°. (2 marks)

iii) In a certain pinhole camera, the screen, is 10cm from the pinhole. When the camera is placed 6m away from a tree a sharp image of the tree 16cm high is formed on the screen. Determine the height of the tree. (2 marks)

17. Figure 1 below shows two rays from a mirror forming an image of some object placed in front of the plane mirror. Complete the ray diagram to show the position of the object. (2 marks)

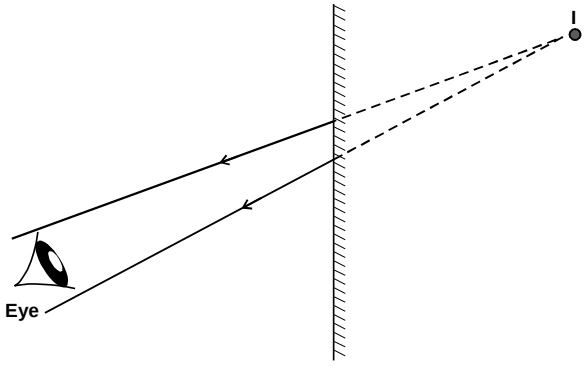


Fig 1

18. **i)** State the characteristics of images formed by a pinhole camera. (2 marks)

    ii) What is the effects on the image when the camera is elongated ? (1 mark)

19. State two modifications that can be done to a pinhole camera in order to be used to fake still photographs. (2 marks)

20. A vertical object placed on a bench is observed to have three shadows of different sharpness in different directions. Explain this observation. (3 marks)