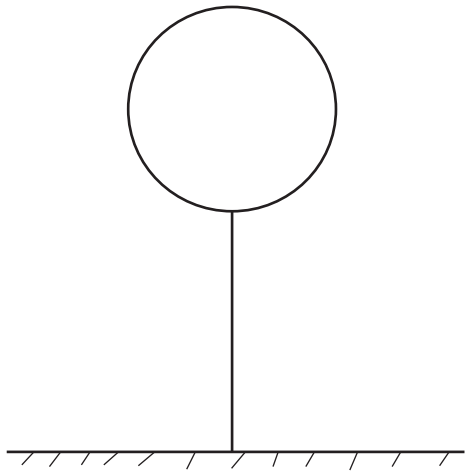


18. a) A ship made of steel is observed to float on water yet the density of steel is more than that of water .
Explain this observation (1 mark)

b) A hot air balloon is tethered to the ground on a windless day as shown in the figure below. The balloon contains 1600m^3 of hot air density 0.7kg/m^3 . The mass of the balloon fabric is 400kg and air density of surrounding air is 1.3kg/m^3



Calculate

i) The tension in the rope (4marks)

ii) Acceleration with which the balloon begin to rise when the rope is cut. (3 marks)

NAME:..... INDEX NO:.....
SCHOOL SIGNATURE
DATE

232/1
PHYSICS
PAPER 1
July / Aug 2015
2 Hours

NAROK SOUTH DISTRICT SECONDARY SCHOOLS JOINT EXAMINATION
Kenya Certificate of Secondary Education (K.C.S.E)
PHYSICS
Paper 1
2 ½ Hours

INSTRUCTIONS
Write your name and index number in the spaces provided above.
This paper consists of two sections A and B.
Answer all the questions in section A and B in the spaces provided.
All working must be clearly shown.
Non programmable silent calculators and KNEC Mathematical tables may be used.

Take $g = 10\text{Nkg}^{-1}$

FOR EXAMINER'S ONLY

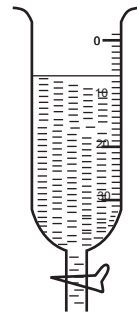
| Section | Question | Maximum | Candidates Score |
|---------|--------------|---------|------------------|
| | 1 - 13 | 25 | |
| | 14 | 10 | |
| | 15 | 10 | |
| | 16 | 8 | |
| | 17 | 12 | |
| | 18 | 8 | |
| | 19 | 7 | |
| | TOTAL | | |

This paper consists of 11 printed pages
Candidates should check the question paper to ensure that all the pages are printed as indicated and no questions are missing.

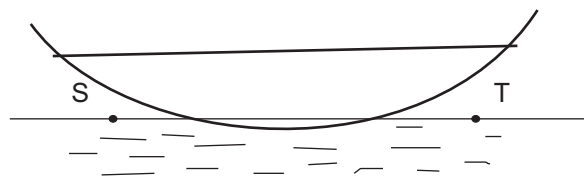
SECTION A (25 MARKS)

Answer all the questions in this section

1. The figure below shows the reading on a burette after 50 drops of liquid have been used. If the initial reading was at zero mark determine the volume of (drops in cm^3)

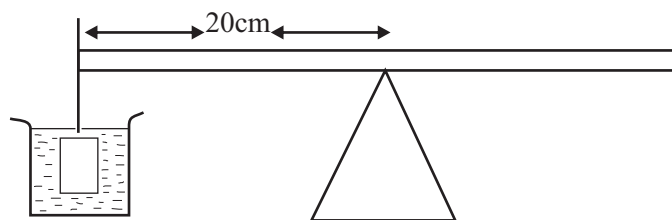


2. The figure below shows a small toy floating in water in a basin S and T are two points near the toy.

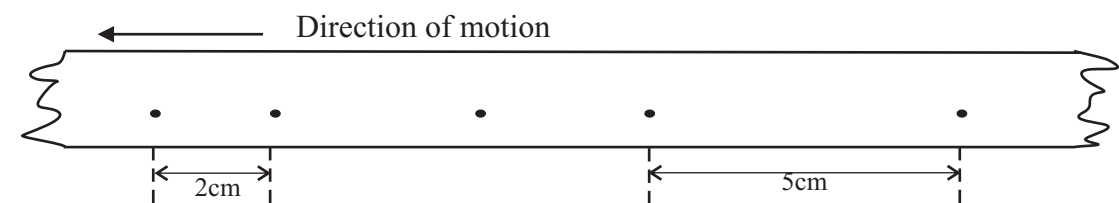


A drop of kerosene is introduced at S. State and explain the observation (2 marks)

3. The figure below shows a uniform metre rule of weight 2.0N at equilibrium with a load of 5N suspended on one end and immersed in liquid. Find the upthrust on the load. (3 marks)

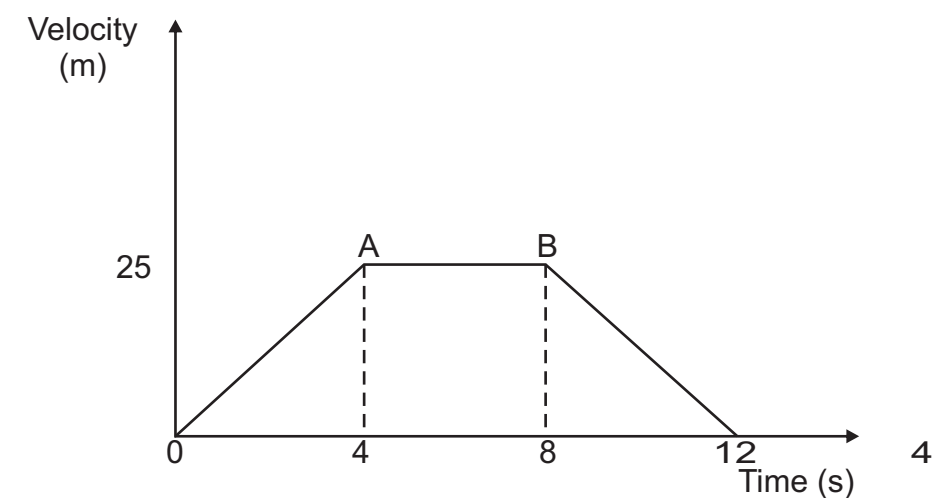


- c) The figure below shows dots produced on a tape pulled through a ticker timer by a moving body. (2 marks)



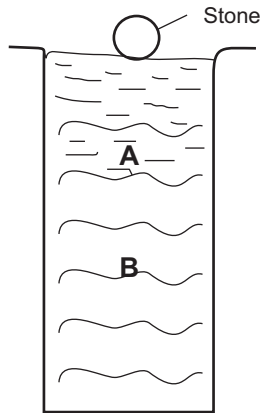
The frequency of the ticker-timer is 50Hz calculate the acceleration of the body (3 marks)

- d) The figure below shows a velocity time graph for a racing car



- i) Describe the motion of the body between
 (I) O A (1mark)
 (II) AB (1mark)
- ii) What is the total distance travelled by the car. (3 marks)

17. The figure below shows a tall jar containing the fluids A and B. Viscosity of A is highest than that of B. A solid is released at the top of the jar and falls through the fluids



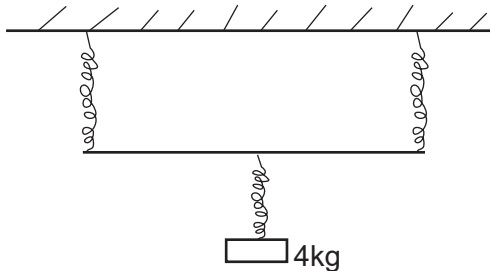
- a) Name the two forces acting on the ball as it falls through the fluids (2 marks)

On the axes provided sketch the velocity – time graph for the motion of the spheres (2 marks)

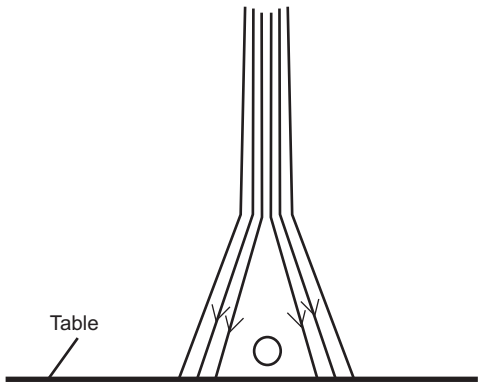


- b) An object of mass 2kgs moving at 5mls collide with another object of mass 3kgs at rest .Find the velocity of the two bodies if they stick together (2 marks)

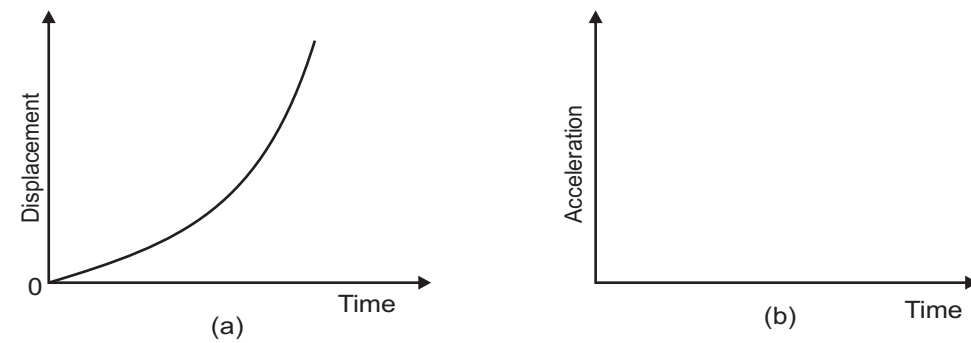
4. Explain the cause of random motion of smoke particles as observed in Brownian motion experiment using a smoke cell (2marks)
-
-
-
-
5. Three identical spring balances each of spring constant 40N/M and weight 0.5N are use to support a load as shown. Determine the Total extension of the system (3 marks)



6. The figure bellow shows a funnel inverted over a light ball on a table. Air is blown in to the funnel as indicated in the diagram. State and explain what is observed. (2 marks)

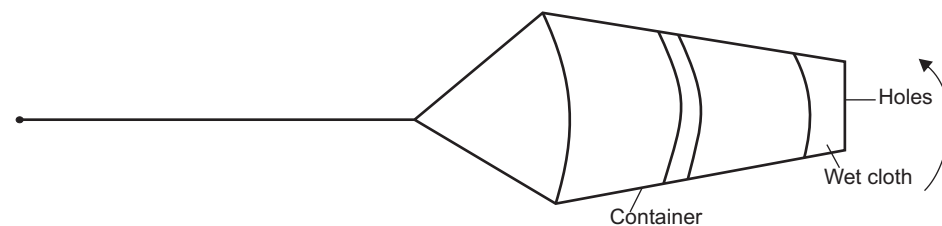


7. The figure shows the displacement time graph for a certain motion, on the axis provided in (b) sketch the acceleration – time given for the same motion. (1 mark)

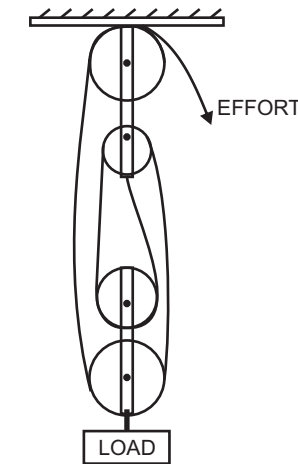


8. A bullet of mass 0.006 kg is fired from a gun of mass 0.5 kg. If the muzzle velocity of the bullet is 300 m/s, Calculate the velocity of the gun. (3 marks)

9. The figure below shows a container with small holes at the bottom in which wet clothes have been put. When the container is whirled in air at high speed, it is observed that the clothes dry. Explain how the rotation of the container causes the clothes to dry. (2 marks)

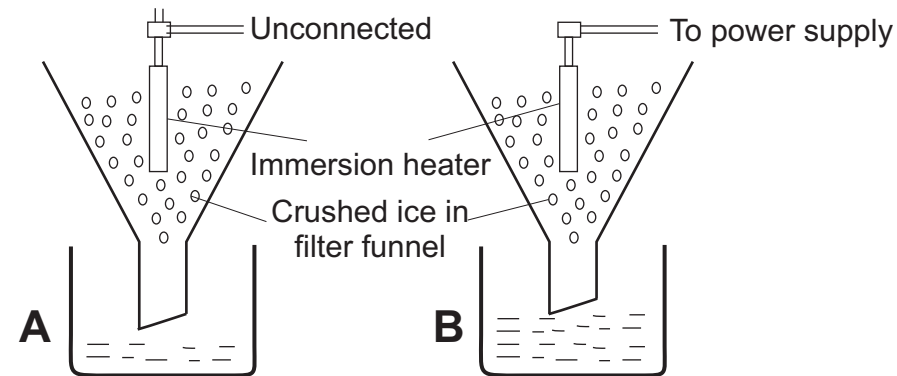


16. The figure below shows a pulley system being used to raise the load.



- i) Determine the velocity ratio of the system (1 mark)
 - ii) If the load of 200 N is raised by applying an effort of 56 N. Determine the efficiency of the system. (3 marks)
 - iii) Give two reasons for the pulley system being less than 100% efficient (2 marks)
- b) Name one device used to convert light energy directly into electrical energy. (1 mark)
 - c) A stone of mass m is dropped from a window 50 m above the ground. Find the kinetic energy and the velocity of the stone as it reaches the ground (4 marks)

- (b) The diagram below shows two identical funnel with crushed ice surrounding similar immersion heaters. In a apparatus A the heater is unconnected and when the ice is melting steadily 15g of water is collected in 300s. In apparatus B the heater connected to a power supply of 50w .When water drops at steady rate ,58g of water is collected in 300s.

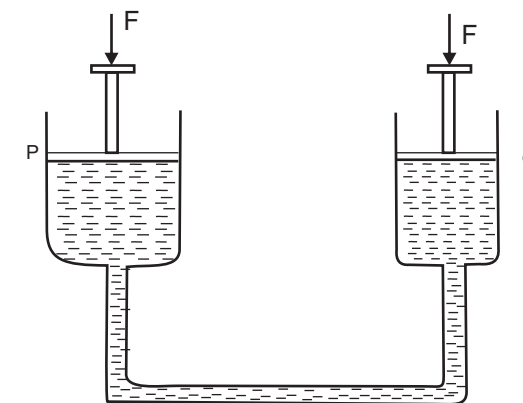


- i) What is the reason for setting up funnel A (1 mark)
- ii) Determine the
- Quantity of heat supplied by the heater (2 marks)
 - Mass of ice melted by the heater (2 marks)
 - Specific latent heat of fusion (3 marks)

10. Convert 216 Kelvin into degrees centigrade. (1 mark)

11. In a vacuum flask walls enclosing the vacuum are silvered on the inside. State the reason (1 mark)

12. 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 P and Q shown.



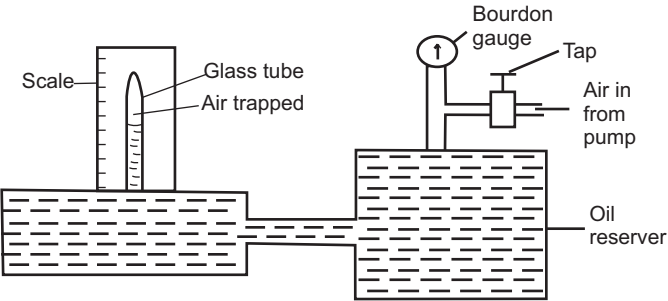
When equal force F are applied the piston P moves up while Q moves down . Explain this observation (2 marks)

13. State Archimedes Principle (1 mark)

SECTION B (55 MARKS)

Answer all questions in this section in the spaces provided.

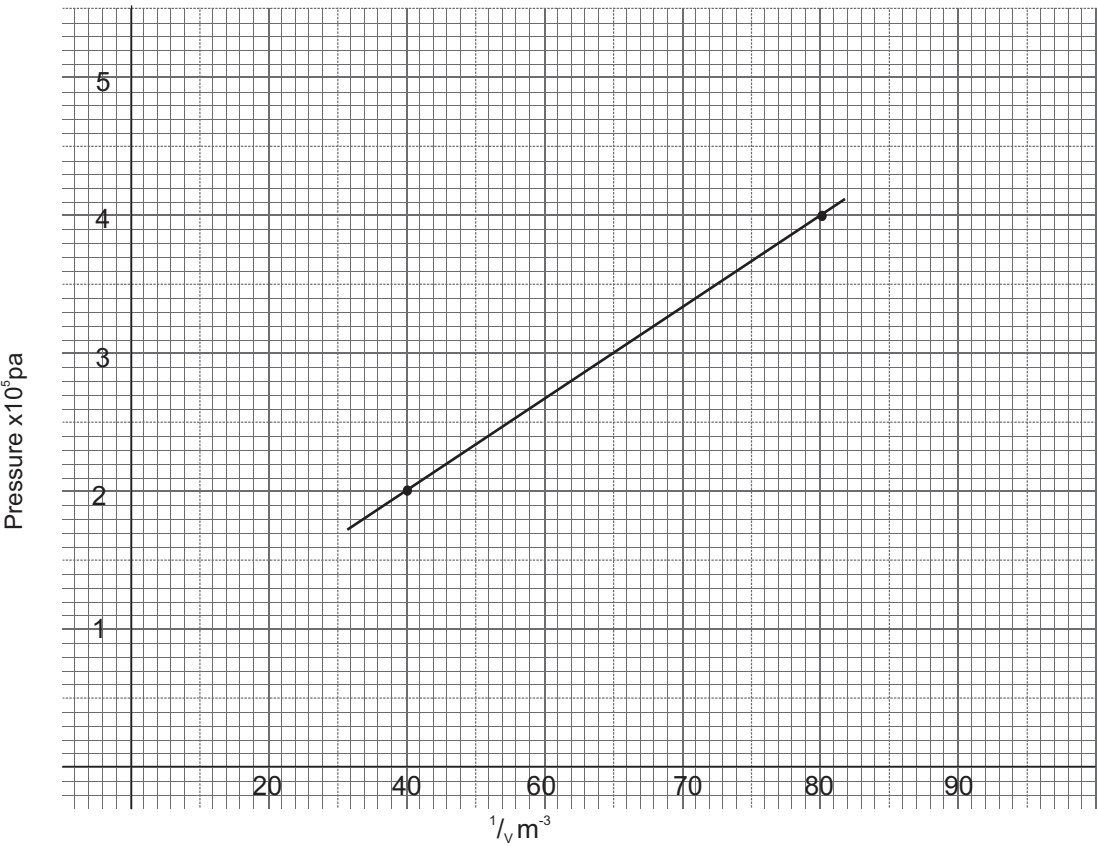
14. a) The figure below shows a set up that may be used to verify Boyle's law.



i) Describe the measurements that should be taken in this experiment (2 marks)

ii) Explain how the measurements taken would be used to verify Boyle's law (3 marks)

The graph below shows the relationship between the pressure of a fixed mass of a gas at constant temperature $T=300\text{K}$ and the volume of the gas.



(b) Given that $P = \frac{2RT}{V}$ where R is a constant, Determine the value of R (4 marks)

15. (a) Define the term ,latent heat of fusion. (1mark)