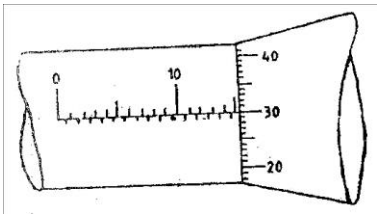
Name……..index No…….
Candidate's signature…….
232/1
PHYSICS
Paper 1
2 Hours
BUNYORE- MARANDA JOINT ENROLMENT EXAMINATIONS
Kenya certificate of secondary Education
PHYSICS
Paper 1
JANUARY 2011
2 hours
Write your name and index number in the spaces provided above
This paper consist of TWO section A and B
Answer ALL the questions in section A and B in the spaces provides
ALL working MUST be clearly shown
Mathematical tables and electronic calculators may be used
For examiners use only

Section	Question	Maximum score	Candidate's score
A	1-14	25	
B	15	9	
	16	13	
	17	11	
	18	8	
	19	14	
	Total score	80	

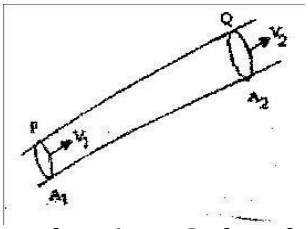
This paper consists of 12 printed pages
Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing

SECTION A: 25marks

1. The micrometer screw gauge represented by Figure 1 below has a thimble scale of 50 divisions. What is the reading shown (1mk)



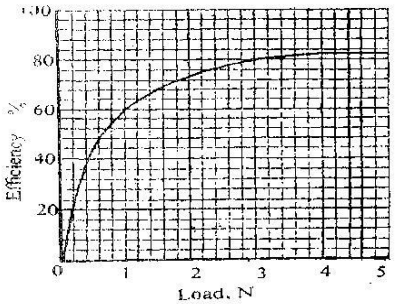
2. Figure 2 below shows a section of a pipe PQ. A constant pressure difference maintains a streamline flow of a liquid in the pipe



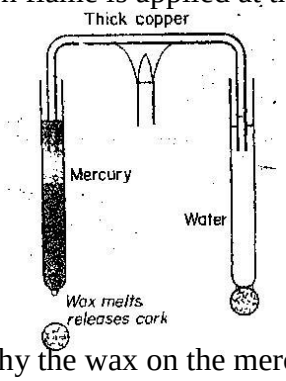
If the X- area A_1 at P is less than A_2 at Q show how the liquid V_1 at P is related with velocity V2 at Q (1mk)

3. An object is whirled in a horizontal plane at an angular velocity of 20 radians per second. If the radius of the path is 1.5 m, determine the object's linear velocity

4. Figure 3 shows the efficiency – load graph for a pulley system. Explain why the efficiency is nearly 100% at high values of the load (2mks)



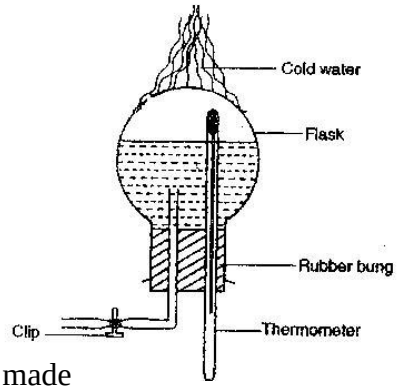
5. The diagram below shows two test tubes one filled with water and the other with mercury. Some wax is fixed at the bottom of each. A thick copper rod is dipped in both as shown. A Bunsen flame is applied at the centre of the rod



Give a reason why the wax on the mercury test tube falls off first

6. A man of mass 75 kg stands on a weighing machine in a lift. Determine the reading on the weighing machine when the lift moves upwards at an acceleration of $2m/s^2$ (3mks)

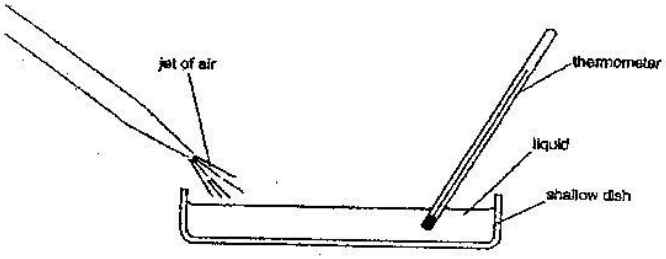
7. A student set up an apparatus as shown in the figure below and heated the water to boiling. He stopped the heating, closed the capillary tube with a clip and then poured cold water onto the flask



Explain the observations made (2mks)

8. Distinguish between mass and weight (1mk)

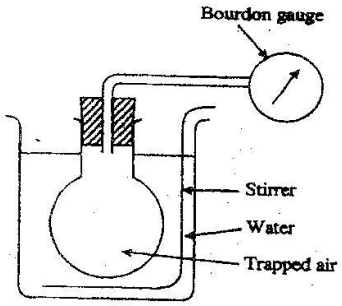
9. The figure shows a shallow dish containing a volatile liquid. The bulb of a thermometer is held in the liquid. A jet of air is blown over the surface of the liquid, so that the liquid evaporates rapidly.



State and explain what happens to the reading shown on the thermometer

10. Figure (a) below shows a glass ornament standing on a shelf. Figure (b) shows an identical ornament filled with colored glass beads

17. A student is asked to draw a diagram of the apparatus used to investigate how the pressure of some trapped air varies with temperature. His diagram is shown in figure below



a) complete the diagram by adding and labeling two essential items which the student has omitted

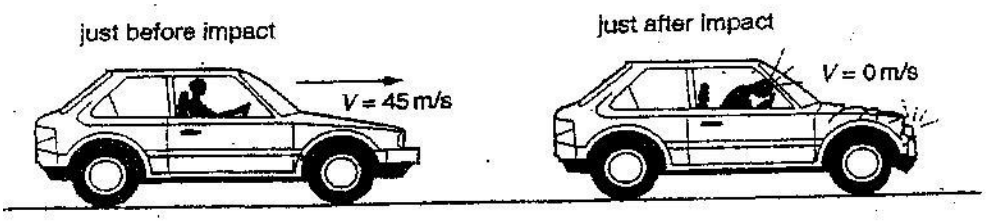
b) what is the purpose of

i) Stirrer (1mk)

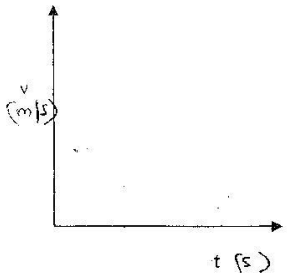
ii) The Bourdon gauge (1mk)

c) At what Celsius temperature will the pressure of the air theoretically be zero (1mk)
d) What name is given to this temperature (1mk)
e) A certain mass of hydrogen gas occupies a volume of $1.6m^3$ at a pressure of 1.5 x 105 Pa and temperature 12 °C. determine its volume when the temperature is 0° C at a pressure of 1.0×10^5 Pa (3mks)
f) Using the kinetic theory of gases, explain how a rise in the temperature of a gas causes a rise in the pressure of the gas if the volume is kept constant (2mk)

18. a) State the law of conservation of linear momentum (1mk)
b) Figure below shows a car with a dummy driver before and after a collision



The mass of the dummy driver is 90 kg. The impact time to reduce the dummy's speed from 45 m/s to zero is 1.2 s.
i) Calculate the average force on the dummy during impact (2mk)
ii) State the main energy transformation during the collision (1mk)
iii) Calculate how much of the dummy's energy is transformed during the collision (3mks)
c) A steel ball of mass m is released inside a viscous fluid; sketch on the axis provided a graph to show how its velocity varies with time. (1mk)



19. a) State the Hooke's law (1mk)
b) The table below shows the values of extensions of a spiral spring when various forces are applied to it

Force, F(N)	0	1.2	2.0	3.0	4.0	5.0	6.0
Extension e (cm)	0	0.8	1.5	2.3	3.1	3.8	4.6

i) On the grid provided, plot a graph of force against extension (5mks)
ii) From the graph, determine the work done in stretching the spring by 4cm (3mks)
c) Use the graph to determine the spring constant (3mks)
d) State two factors that affect the spring constant (2mks)