

Name..... Index No.....



Candidate's signature.....

Date.....

232/1
PHYSICS
Paper 1
(Theory)

**ALLIANCE GIRLS' HIGH SCHOOL
MOCK EXAMINATION**

July/August 2014
2 Hours

Kenya Certificate of Secondary Education (K.C.S.E)

Instructions to Candidates

- Write your name and index number in the spaces provided above.
- This paper consists of **two** sections A and B
- All working **MUST** clearly be shown in the spaces provided in this booklet.
- Take: acceleration due to gravity, $g = 10\text{m/s}^2$

FOR EXAMINER'S USE ONLY

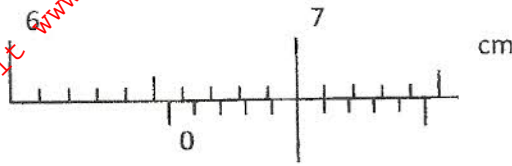
Section	Question (s)	Max. Score	Candidates Score
A	1 – 14	25	
B	15	11	
	16	11	
	17	15	
	18	09	
	19	09	
	Total		80

This paper consists of 12 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 (25Marks)

Answer all the questions in this section in the spaces provided.

1. The diagram below shows part of a vernier scale used to measure the length of a glass prism.



If the instrument has a zero error of 0.05cm, determine the length of the block in metres. (1mark)

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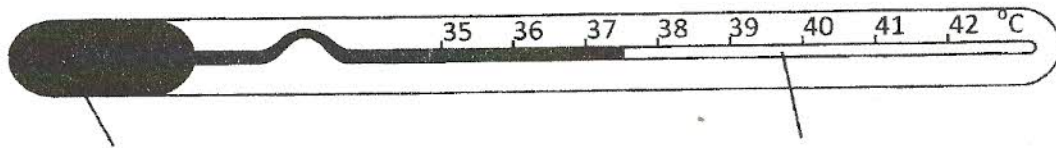
2. State one force that changes as an object moves inside a fluid in a cylinder when dropped downwards. (1mark)

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3. A swimmer climbs out of a swimming pool on a warm, dry day. Almost immediately he begins to feel cold. Explain this. (1mark)

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4. A clinical thermometer is designed to respond quickly to a change in temperature and to have a high sensitivity.



State any two modifications that can be made to the thermometer to meet these two specifications. (2marks)

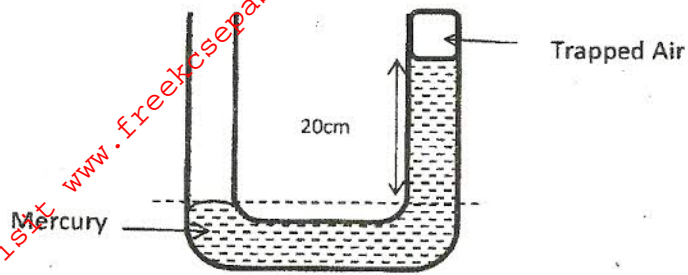
I: Responds quickly.....

II: High sensitivity.....

5. State the Pascal's principle. (1mark)

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6. The figure below shows a manometer that is closed at one end.



Determine the pressure of the trapped air in cmHg. Take atmospheric pressure as 75cmHg. (3marks)

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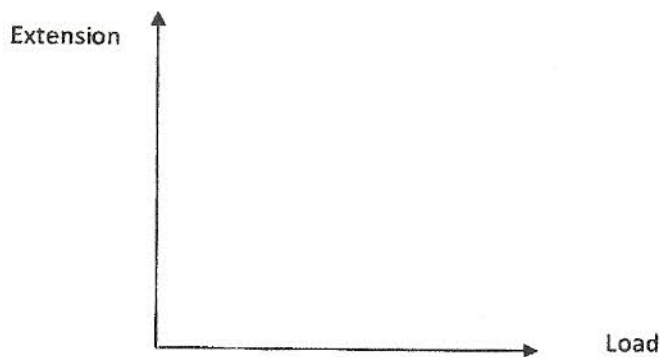
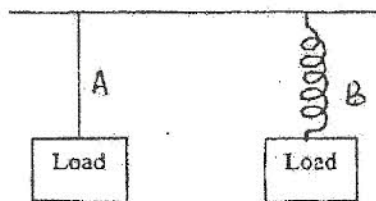
7. When a liquid is cooled in a flask its level first rises then falls. Explain this observation. (2marks)

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8. State one factor that affects the spring constant of a hellical spring. (1mark)

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9. The figure shows a wire A and a spring B made of the same material. The thickness of the wire is the same in the both cases. Masses are added on each at the same intervals and the extension noted each time. On the same axes provided, sketch the graphs of extension against load for each. (Hooke's law is obeyed.) (2marks)



10. The figure below shows a steel needle floating on water surface in a beaker before water was heated.

Steel needle floating on water surface



(a) Give a reason why the steel needle is able to float on water despite steel being denser than water. (1 mark)

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(b) State and explain the observation made after heating for some time. (1 mark)

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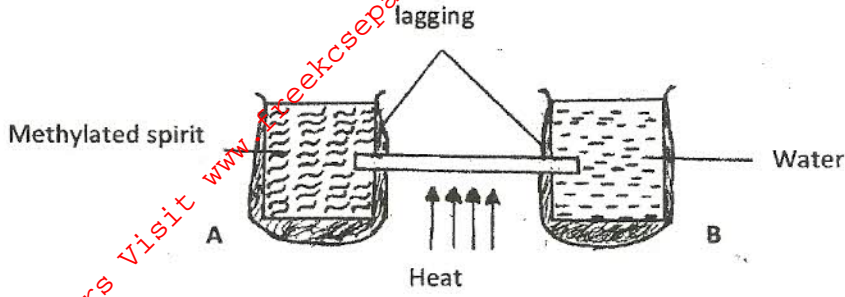
11. The diagram below shows an empty wine glass.



State and explain the effect on its stability when wine is put into the glass. (2 marks)

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12. The figure below shows two identical containers A and B into which a copper rod is fitted. The containers are well lagged.



The liquids in the containers were initially at the same temperature if the heat is applied continuously at the position shown state with reason the container in which low temperature is recorded. (2marks)

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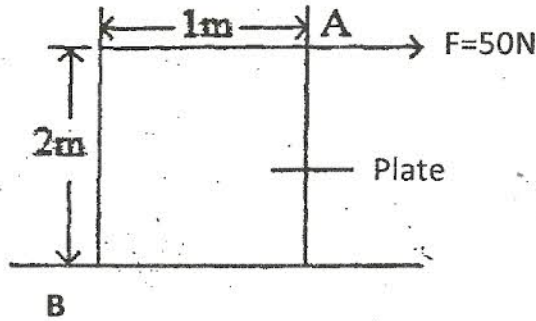
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13. State **two** reasons why gases diffuse faster than solids. (2marks)

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14. (d) The figure below shows a metal plate 2 m long, 1m wide and negligible thickness. A horizontal force of 50 n applied at point 'A' Just makes the plate tilt.



Calculate the weight of the plate. (3marks)

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SECTION B (55marks)

Answer all the questions in this section in the spaces provided.

15. (a) State the law of conservation of linear momentum.

(1mark)

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(b) A Block of mass 200g rests on a rough horizontal table. A force of 0.6N pulls the blocks so that it moves with a constant acceleration of 1m/s^2 calculate:

(i) The time it takes to travel a distance of 200m

(3marks)

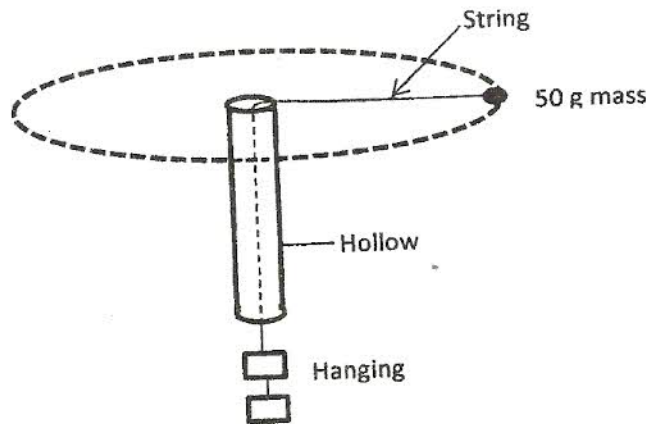
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(ii) The frictional force between the block and the table

(3marks)

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(c) The figure below shows a set up used to investigate factors affecting centripetal force. Use it to answer the questions that follow.



(i) Describe how the setup can be used to carry out the investigations.

(2marks)

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(ii) State any two measurements that should be taken in order to calculate angular velocity. (2marks)

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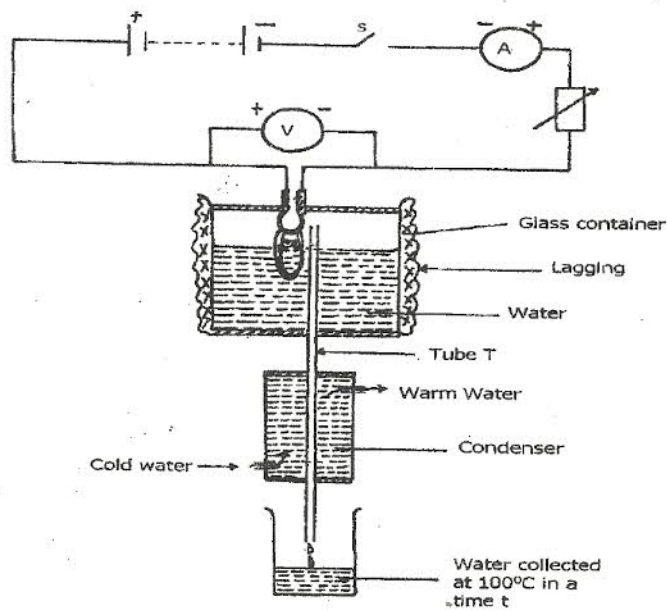
16. (a) Distinguish between heat capacity and specific heat capacity of a substance. (2mark)

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(b) The figure below represent a set up used to determine the specific latent heat vaporization of water by electrical method.



(i) State the measurements to be taken in order to achieve the aim of the experiment. (3marks)

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- (ii) Explain using an equation how the measurements above can be used to determine specific latent heat of fusion. (2marks)

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- (iii) Why is the latent heat of fusion of water of lower value than latent heat of vaporization of the same water? (2marks)

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- (d) Calculate the quantity of heat required to raise the temperature of a substance with a heat capacity of 390J/K from 25°C to 55°C. (2marks)

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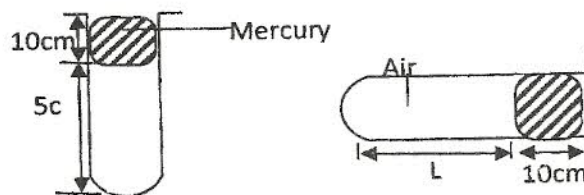
17. (a) State Boyle's law. (1mark)

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- (b) A column of air 5cm is trapped by mercury thread of 10cm as shown in the figure below. If the tube is laid horizontally as shown in (b), calculate the new length of trapped air (atmospheric pressure = 75.0cmHg and density of mercury = 13600kgm⁻³) (3marks)

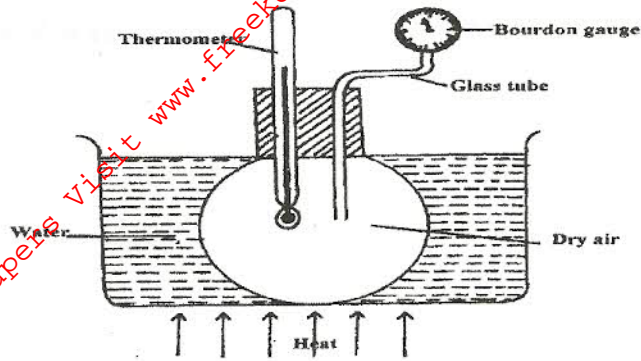


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(e) The figure below shows a simple set up for pressure law apparatus:-



(i) Describe how the apparatus may be used to verify pressure law. (4marks)

(4marks)

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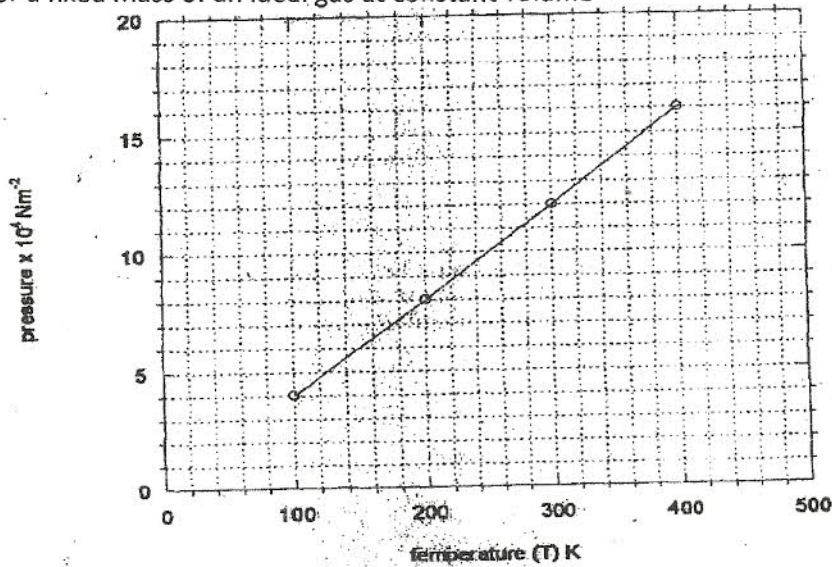
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(iv) State any one precaution to be taken in this experiment. (1mark)

(1mark)

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(iii) The graph in the figure below shows the relationship between the pressure and temperature for a fixed mass of an ideal gas at constant volume



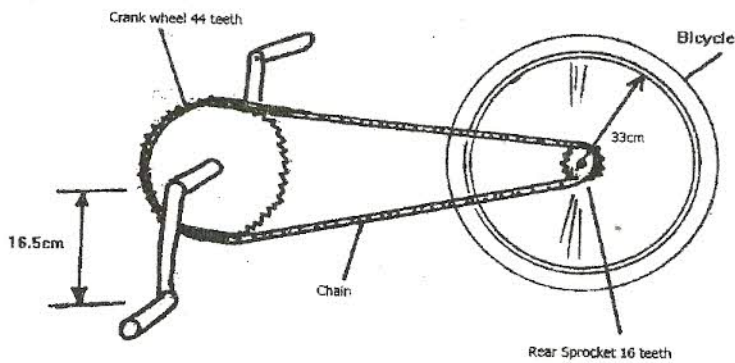
Given that the relationship between pressure, P and temperature, T in Kelvin is of the form $P = kT + C$, Where k and C are constants, determine from the graph, values of k and C .

(4marks)

(d) A gas is put into a container of fixed volume at a pressure of $2.1 \times 10^5 \text{ Nm}^{-2}$ and temperature 27°C . The gas is then heated to a temperature of 327°C . Determine the new pressure.

(3marks)

18. (a) The figure shows part of a bicycle



Determine;

The velocity ratio

(3marks)

(ii) Efficiency of the bicycle if its mechanical advantage is 0.15

(3marks)

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(iii) State the reason why the mechanical advantage of this bicycle is too low.

(1mark)

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(iv) State and explain how the efficiency of this bicycle can be increased.

(2marks)

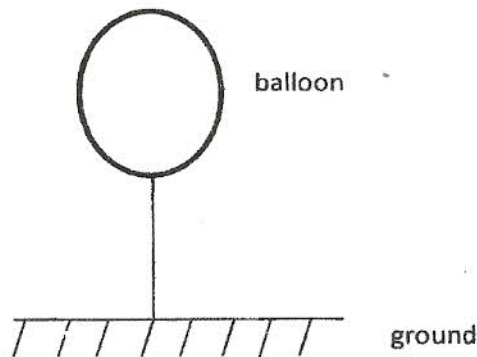
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19. (i) State the Archimedes principle.

(1mark)

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(c) The mass of the fabric of a large balloon is 100kg. The balloon is inflated with 200m^3 of helium. The balloon is attached to a cable fixed to the ground as shown (Density of air and helium are 1.25kg/m^3 and 0.2kg/m^3 respectively)



(i) Indicate all the forces acting on the system.

(1mark)

(ii) If the system is at equilibrium write an equation relating the three forces in (i) above.

(1mark)

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(iii) Calculate the upthrust on the balloon

(3marks)

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(iv) Calculate the tension on the string

(3marks)

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END

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