

NAME:

INDEX NO:.....

SCHOOL:

Candidate's signature:

Date:

232/1

PHYSICS

PAPER 1

JULY/AUGUST 2013

TIME: 2 HOURS

ALLIANCE GIRLS' HIGH SCHOOL
PREMOCK 2013
Kenya Certificate of Secondary Education (K.C.S.E)

INSTRUCTIONS

1. The paper consists of two sections, Section A and B.
2. Answer ALL the questions in section A and B in the spaces provided.
3. ALL answers and working MUST be clearly shown.
4. Mathematical tables and electronic calculators may be used.

Take acceleration due to gravity $g = 10\text{ms}^{-2}$

FOR EXAMINER'S USE:

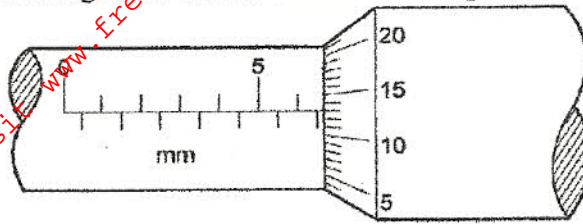
SECTION	QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
A	1-13	25	
B	14	11	
	15	11	
	16	10	
	17	12	
	18	11	
	TOTAL	80	

This paper consists of 11 printed pages

Candidates should check to ensure that all pages are printed as indicated and no questions are missing

SECTION A (25 MARKS)

1. i) Determine the reading of the instrument shown in figure below.



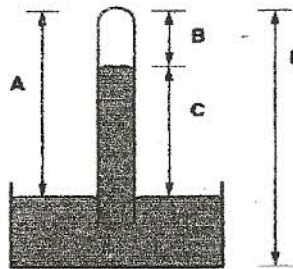
Readingmm.

(1mark)

- ii) If the instrument above has zero error of -0.02mm, determine the actual reading.

..... (1mark)

2. The diagram shows a simple mercury barometer. Which height is a measure of the atmospheric pressure?

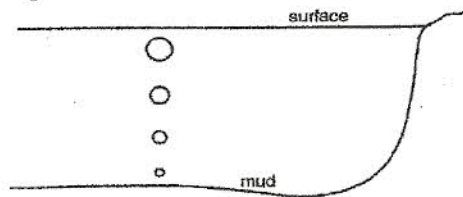


Which height is a measure of the atmospheric pressure? (1mark)

3. Highlight two facts which shows that heat from the sun does not reach the earth surface by convection. (2 marks)

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4. Bubbles of gas, escaping from the mud at the bottom of a deep lake, rise to the surface. As the bubbles rise it is observed that they get larger.



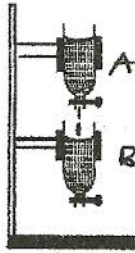
Explain this observation.

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 (2 marks)

5. A person holds a glass beaker in one hand and fills it quickly with hot water. It takes several seconds before his hand starts to feel the heat. Explain.

..... (1 mark)

6. Two burettes A and B were arranged as shown below.



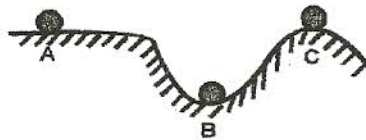
Burette A leaked into burette B at a rate of 10 drops per minute. If the initial reading on both burettes was 25.0ml, what would be their readings at the end of one hour if B does not leak and the average volume of one drop of water is 2.5 mm³? (2 marks)

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7. The figure below shows spherical balls placed at different positions on a surface.



Identify the state of equilibrium of the ball in each position. (3 marks)

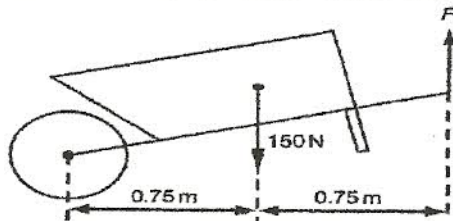
- A.....
- B.....
- C.....

8. State one difference between boiling and evaporation. (1 marks)

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9. The diagram shows a wheelbarrow and its load, which have a total weight of 150 N. This is supported by a vertical force F at the ends of the handles.



Calculate the value of F.

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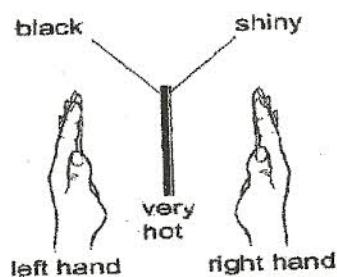
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.....(3marks)

10. When a body is partially immersed in a liquid, it appears lighter than it actually is. Explain.

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 (1 mark)

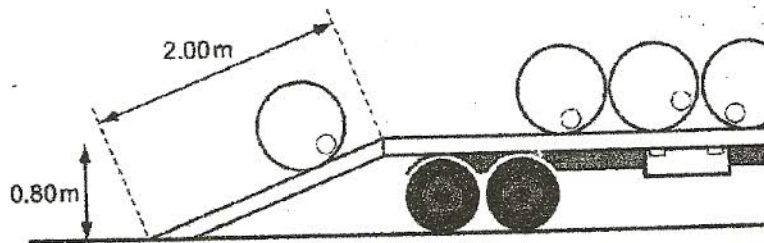
11. The diagram shows a thick copper plate that is very hot. One side is black, the other is shiny. A student places her hands the same distance from each side as shown.



State with reasons, which hand feels warmer

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 (2 mark)

12. A workman rolls a barrel of weight 2000 N up a plank of length 2.00 m and on to a lorry. The back of the lorry is 0.80 m above the horizontal surface of the road.

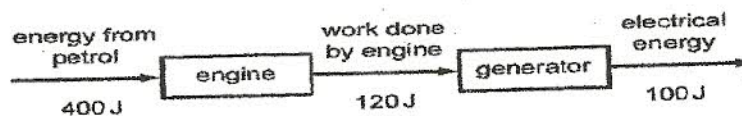


Calculate the work done on the barrel against gravity.

(3 marks)

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13. Energy from petrol is used to operate an engine. The engine drives a generator, which produces electrical energy.



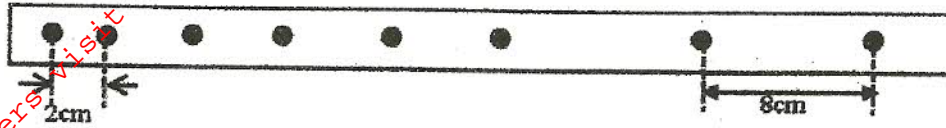
Calculate the overall efficiency of the process.

(2 marks)

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SECTION 2

14. The tape in figure 9 below was obtained from an experiment using a ticker timer of frequency 50Hz. The tape was pulled by a trolley.



If the trolley that was pulling the tape was accelerating,

- i) Show on the diagram, the direction of acceleration of the trolley. (1 mark)
- ii) Calculate the acceleration of the trolley. (4 marks)

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b) A stone is allowed to fall freely from the top of a tower 60m high. At the same time, a second stone is thrown vertically upwards with a velocity of 20m/s from the ground. Find;

- i) The time taken by the two stones before they meet. (4 Marks)

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- ii) The height at which the two stones meet. (2 marks)

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15. A stone shot of mass 400g is tied to a string of length 70cm. It is swung vertically at revolutions per second.

(a) **Determine:**

(i) Periodic time

(2marks)

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(ii) Angular velocity

(2marks)

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(iii) Linear velocity

(2mks)

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(iv) Maximum tension in the string.

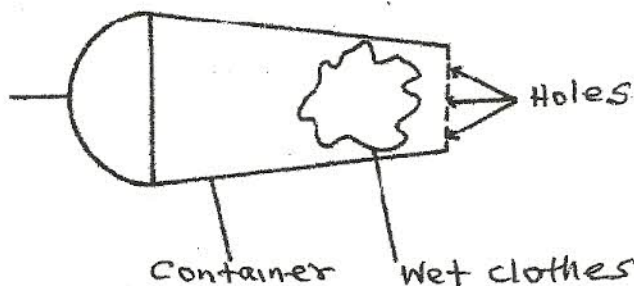
(3marks)

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(b) The figure 5 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 as shown, it is observed that the clothes dry faster.



Explain how the rotation of the container causes the clothes to dry faster.

(2)

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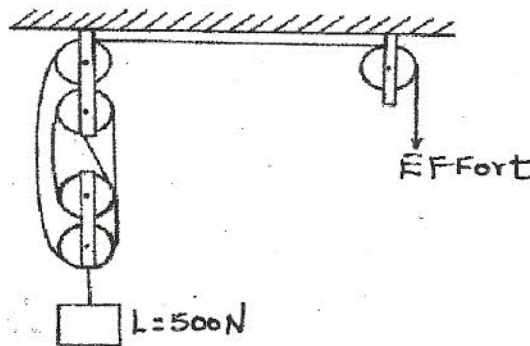
16.a) Define the term Work.

(1mark)

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b) The diagram below shows a set of pulley used to lift a load of 500N



i) What is the velocity ratio of the pulley system.

(1mark)

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ii) Calculate the work done on the load if the effort moves down by 0.8m.

(2marks)

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iii) If the efficiency of the machine is 80%, find the effort required to just lift the load.

(3marks)

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iv) State one reason why efficiency of the pulley system not 100%.

(1mark)

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c) A person of mass 75kg runs up a flight of stairs and develops a power of 300W. Calculate the velocity of the person.

(2marks)

17. (a) Define specific latent heat of Vaporization

(b) In an experiment to determine the specific latent heat of vaporization of water, steam at 100°C was passed into water contained in a well lagged copper calorimeter.

The following measurements were made:

- Mass of calorimeter = 50g
- Initial mass of water = 70g
- Initial temperature of water = 5°C
- Final mass of water + Calorimeter + condensed steam = 123g
- Final temperature of mixture = 30°C
- Specific heat capacity of water = 4200 J kg⁻¹ K⁻¹
- Specific heat capacity of copper = 390 J kg⁻¹ K⁻¹

(I) Determine

(i) Mass of condensed steam

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(ii) Heat gained by water and calorimeter.

(2 marks)

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(II) Given that L is the specific latent heat of vaporization of steam

(i) Write an expression for the heat given out by steam.

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(ii) Determine the value of L

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