NAME: …… **INDEX NO. ……..**

SCHOOL: ……..……. **DATE: ……..…….**

CANDIDATE'S SIGN. ……..……..

232/1

PHYSICS

PAPER 1 (THEORY)

JULY/AUGUST 2014

TIME: 2 HOURS

KISUMU WEST DISTRICT JOINT EVALUATION EXAM

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

PHYSICS

PAPER 1 (THEORY)

INSTRUCTIONS TO THE CANDIDATES:

- *Write your **name, school** and **index number** in the spaces provided above.*
- *Answer **all** the questions both in section **A** and **B** in the spaces provided below each question*
- *All workings **must** be clearly shown; marks may be awarded for correct steps even if the answers are wrong.*
- *Mathematical tables and silent electronic calculators may be used.*
- *Take g= 10m/s^2*

For Examiners' Use Only

SECTION	QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
Section A	1-14	25	
Section B	15	10	
	16	11	
	17	10	
	18	10	
	19	14	
	TOTAL	**80**	

This paper consists of 8 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

SECTION A 25 MARKS

Answer all questions in this section

1. The figure below shows a vernier caliper scale.

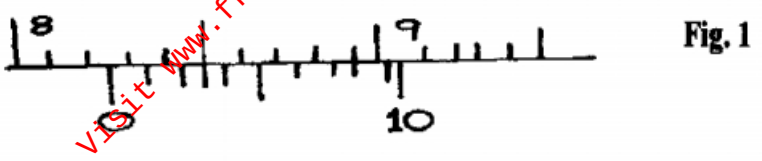

Fig. 1

If the vernier calipers used had a zero error of -0.02 what is the actual reading of the scale. (2mks)

2. A body is projected vertically upwards from the top of a building. Assuming that it lands at the base of the building. Sketch the velocity time graph of the motion. (2mks)

3. The stability of a body can be increased by increasing the base area and lowering its centre of gravity. State **one** way of lowering its centre of gravity. (1mk)

……..

4. When a mercury thermometer is used to measure the temperature of hot water, it is observed that the mercury level first drops before beginning to rise. Explain. (2mks)

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5. When a Bunsen burner is lit below wire gauze, it is noted that the flame initially burns below the gauze as shown in figure 2 below. After sometime the flame burns below as well as above the gauze

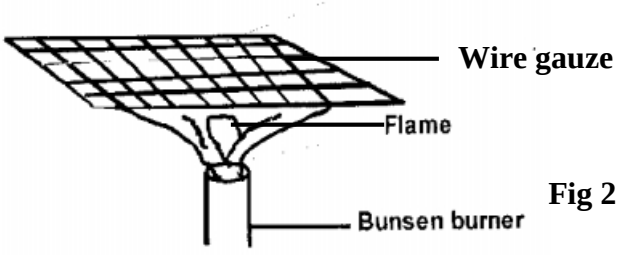

Fig 2

Explain this observation (2mks)

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……..

6. Name **one** force that determines the shape of a liquid drop on a solid surface (1mk)

……..

7. (a) What is surface tension? (1mk)

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(b) Figure 3 below shows a funnel dipped into a liquid soap solution.

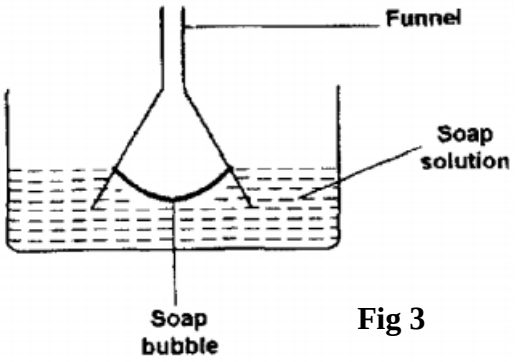

Fig 3

Explain what happens to the soap bubble when the funnel is removed. (1mk)

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8. Using the idea of particles, explain why the pressure inside the tyre is increased when it is pumped up. (2mks)

……..

……

9. A trolley of mass 0.5kg moving with a velocity of $1.2ms^{-1}$ collides inelastically with a second trolley of mass 1.5kg moving in the same direction with a velocity of $0.2ms^{-1}$.

(a) What is an inelastic collision? (1mk)

……

(b) Determine the velocity of the trolleys after collision. (2mks)

10. Highlight **one** fact which shows that heat from the sun does not reach the earth surface by convection. (1mk)

……

11. Three identical springs each of spring constant 4.5N/m and weight 0.5 N are used to support a load as shown in figure 4 below.
Determine the total extension of the system (2mks)

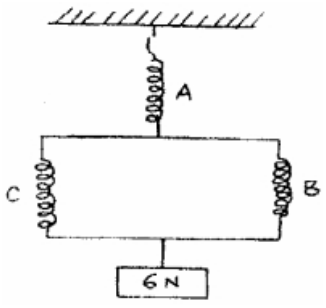

Figure 4

12. State **two** reasons why mercury is preferred as a barometric liquid and not water (2mks)

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……

13. Figure 5 below shows a uniform meter rule balancing when a mass of 200g is hung at one end. Determine the tension **T** in the string (2mks)

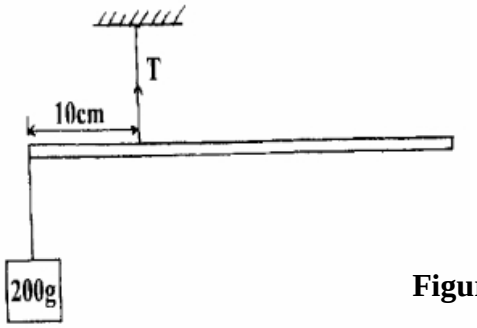

Figure 5

14. Water tanks in houses are erected as high as possible. Explain (1mk)

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SECTION B (55 MARKS)

Answer all questions in this section

15. (a) What is work as defined in physics? (1mk)

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……

(b) A pulley system has two pulleys on the lower block and one pulley on the upper block. In order to raise the load of 6N, an effort of 2N is applied.

(i) Draw a sketch to show the pulley system. (3mks)

(ii) Determine the efficiency of the pulley system. (3mks)

(iii) If the lower block weighs 0.4N, determine the frictional force which opposes the motion (3mks)

16. (a) A liquid at 80^0C in a cup was allowed to cool for 20 minutes. State **two** factors that determine the final temperature. (2mks)

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……..…….

(b) What is meant by specific latent heat of vaporization? (1mk)

…….

…….

(c) In an experiment to determine the specific latent heat of vaporization **L** of water, steam at 100^0C was passed into water contained in a well lagged copper calorimeter. The following measurements were made.

Mass of calorimeter = 80g

Initial mass of water = 70g

Initial temperature of water = 5^0C

Final mass of calorimeter + water + condensed steam = 156g

Final temperature of mixture = 30^0C

Specific heat capacity of water = 4200JKg^{-1} K^{-1}and specific heat capacity for copper = 390J/Kg^{-1}K^{-1}

(i) Determine the:

(i) Mass of condensed steam (2mks)

(ii) Heat gained by the calorimeter and water (2mks)

(iii) Given that **L**. is the specific latent heat of vaporization of steam;

(i) Write an expression for the heat given out by steam (1mk)

……

……

(ii) Determine the value of **L** (3mks)

17. (a) The figure 6 below shows a stone of mass 450g rotated in a vertical circle at 3 revolutions per second. If the string has a length of 1.5m, determine:

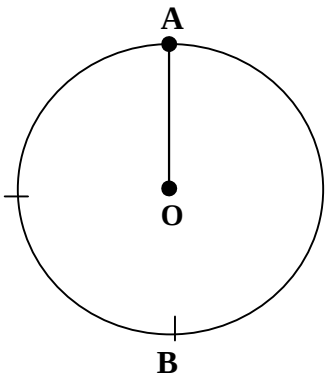

Figure 6

(i) The linear velocity (2mks)

(ii) The tension of the string at position **A** (3mks)

(b) A stone is whirled with uniform speed in horizontal circle having radius of 10cm. It takes the stone 10 seconds to describe an arc of length 4cm. Determine:

(i) The angular velocity μ (2mks)

(ii) The period **T** (3mks)

18. (a) State the law of floatation (1mk)

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(b) Figure 7 shows a piece of cork held with a light thread attached to the bottom of a beaker. The beaker is filled with water.

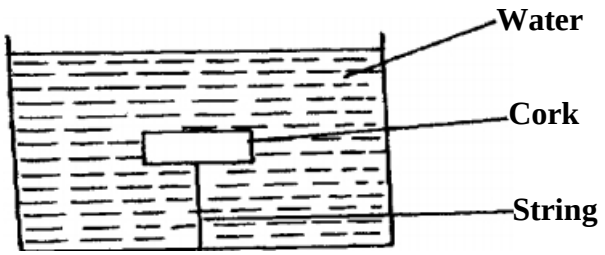

Figure 7

(i) Indicate and label on the diagram the forces acting on the cork (3mks)

(ii) Write an expression showing the relationship between the forces (1mk)

……

……

(c) A solid displaces 8.5cm^3 of liquid when floating on a certain liquid and 11.5cm^3 when fully submerged in the liquid. The density of the solid is 0.8g/cm^3, determine:-

(i) Up thrust on the solid when floating (3mks)

(ii) Density of the liquid (2mks)

19. (a) Define impulse in terms of momentum (1mk)

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……

(b) For a particle of mass **m** which is initially moving vertically downward with velocity **u**, obtain an expression for changes in kinetic energy after;

(i) It has moved freely under gravity for time **t**, (3mks)

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……

……..

(ii) It has moved freely under gravity for a vertical distance **S** (3mks)

……..

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……..

(c) A lead ball is placed on the surface of viscous oil and released.

(i) State the **three** forces acting on the ball as it falls through the oil (2mks)

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……

(ii) State which forces vary during the fall and explain why the variation. (2mks)

……..

……

(iii) What is meant by the term terminal velocity of the ball? (1mk)

……

(iv) Sketch a graph showing the variation of the displacement of the ball with time from when it was released. (2mks)