

Name: ..... Index No. ....  
 School: ..... Candidate's Sign. ....  
 Date: .....

232/1  
 PHYSICS  
 PAPER 1  
 MARCH/APRIL 2011  
 TIME: 2 HOURS

# BUTERE EAST ZONE JOINT EVALUATION TEST

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

Physics  
 Paper 1

## INSTRUCTIONS TO THE CANDIDATES:

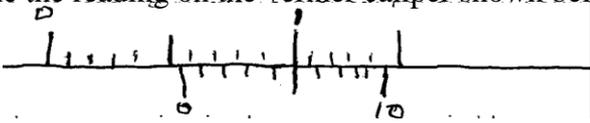
- Write your **name and index number** in the spaces provided above.
- Answer **all** the questions both in section **A** and **B** in the spaces provided below each question
- All workings **must** be clearly shown; marks may be awarded for correct steps even if the answers are wrong.
- Mathematical tables and silent electronic calculators may be used.  
 (*Take acceleration due to gravity  $g = 10\text{ms}^{-2}$  Density of water  $1\text{g/m}^{-3}$* )

## For Examiners' Use Only

SECTION	QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
Section A	1-14	25	
Section B	15	13	
	16	14	
	17	14	
	18	14	
	<b>TOTAL</b>	<b>80</b>	

*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)**

1. Explain why potatoes cook more quickly in a sufuria with a tight lid than in an open one. (1mk)
2. How much work is done in stretching a spring of constant 25N/m from a length of 10cm to a length of 20cm. (3mks)
3. A person alighting from a moving matatu tends to spread his legs. Explain why. (1mk)
4. State the law of **floatation**. (1mk)
5. State any **two** advantages of using mercury other than alcohol as a thermometric liquid. (2mks)
6. Explain the effects of increase in fractional force in a machine to its mechanical advantage (1mk)
7. A boy rides a bicycle at a speed of 10m/s on a flat bend of radius 200metres. Calculate his angular velocity. (3mks)
8. Explain why water rises in a capillary tube when dipped in water. (1mk)
9. Ice is heated from  $-6^{\circ}\text{C}$  to  $10^{\circ}\text{C}$ . Sketch a graph of its volume against temperature. (2mks)
10. A lorry of mass 4500Kg has eight wheels with a pressure of  $7.5 \times 10^5\text{N/m}^2$  above the atmospheric pressure. Calculate the area of contact of each tyre to the ground. (3mks)
11. Convert  $2543\text{mm}^2$  into  $\text{m}^2$  giving your answer in standard form. (1mk)
12. In a trap door experiment a freely falling iron ball takes 0.304s to cover a distance of 46cm. Calculate the value for the acceleration of free fall. (3mks)
13. Determine the reading on the vernier caliper shown below; (2mks)  

14. Explain why evaporation is always accompanied by a cooling effect. (1mk)

**SECTION B (55 MARKS)**

15. In an experiment to determine the specific latent heat of vaporization of water, steam at  $100^{\circ}\text{C}$  was passed into water contained in a well lagged calorimeter. The following measurements were taken;

Mass of calorimeter = 50g

Initial temperature of water =  $5^{\circ}\text{C}$

Initial mass of water = 70g

Final mass of calorimeter + water + condensed steam = 133g

Final temperature of mixture =  $30^{\circ}\text{C}$

Specific heat capacity of water =  $4200\text{JKg}^{-1}\text{K}^{-1}$

Specific heat capacity of copper =  $3900\text{JKg}^{-1}\text{K}^{-1}$

(a) Determine the:

(i) Mass of condensed steam (3mks)

(ii) heat gained by calorimeter and water (3mks)

(b) Given that  $L_v$  is the specific latent heat of vaporization of steam;

(i) write an expression for the heat given out by the steam. (2mks)

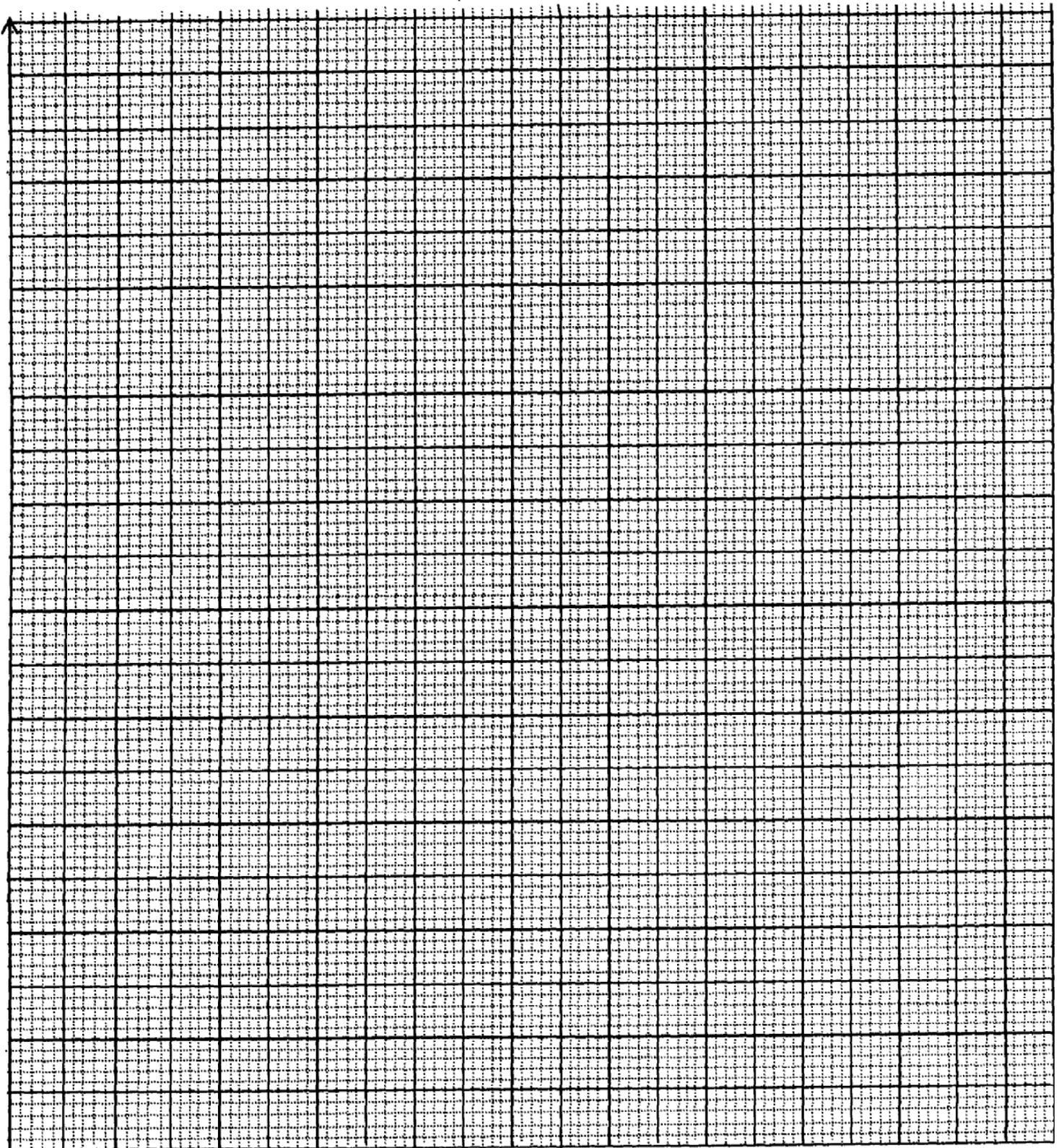
(ii) determine the value of  $L_v$  (4mks)

16. (a) Distinguish between distance and displacement (1mk)

(b) A stone was thrown vertically upwards at an initial velocity and its height above the starting point measured and represented in the table below;

Time (s)	0	1	2	3	4	5	6	7
Height (m)	0	45	80	105	120	125	120	105

(i) Plot a graph of height against time for the motion of the stone. (5mks)



- ii) From your graph determine the velocity of the stone at 2.5sec. (1mk)
- (iii) The acceleration due to gravity at the place the experiment was done. (3mks)
- (iv) the maximum height reached by the stone. (1mk)
- (c) A body is horizontally projected from the top of a building 45m high at horizontal velocity of 20m/s. Calculate the horizontal distance of the point of landing from the roof of the building. (3mks)
17. (a) A car of mass 100Kg has to make a circular turn of radius 25m if it is moving with uniform speed of 15m/s. Calculate;
- (i) The centripetal acceleration (3mks)
- (ii) The centripetal force acting on the car. (3mks)
- (b) A wooden block mass 200g is placed at distance of 9cm from the centre of a thin table. When the thin table is rotated at a constant angular velocity the block begins to slide off the table. If the frictional force between the block and the thin table is 0.8M, determine:
- (i) The linear speed of the block. (4mks)
- (ii) the angular velocity of the thin table. (3mks)
- (c) Explain why a body moving with uniform speed in circular motion is said to accelerate. (1mk)
18. (a) A block of wood weighs 3.0N in air. If density of the wood is  $0.8\text{gcm}^{-3}$ , determine ;
- (i) The volume of the block submerged when it floats in water of density  $1000\text{Kg}\text{m}^{-3}$  (4mks)
- (ii) The minimum mass that should be placed on the top of the block so that the block is completely submerged in water. (3mks)
- (b) A solid when fully immersed weighs 0.30N in water and 0.32N in a liquid. Calculate the relative density of the liquid if the weight of the solid is 0.50N in air. (3mks)
- (c) A simple hydrometer consisting of cylindrical glass tube of cross sectional areas  $2.0\text{cm}^2$  is weighed with mercury to give a total mass of 15g. What length is immersed when it floats in water of density  $1.0\text{gcm}^3$ ? (4mks)