Name…… **Index No**……..

School…….. **Date**…….

Candidate's signature……..

232/1
PHYSICS
Paper 1
July / August 2012
Time 2 HOURS

BURETI DISTRICT JOINT EVALUATION TEST - 2012

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

232/1
PHYSICS
Paper 1
July / August 2012
Time 2 HOURS

INSTRUCTIONS TO CANDIDATES

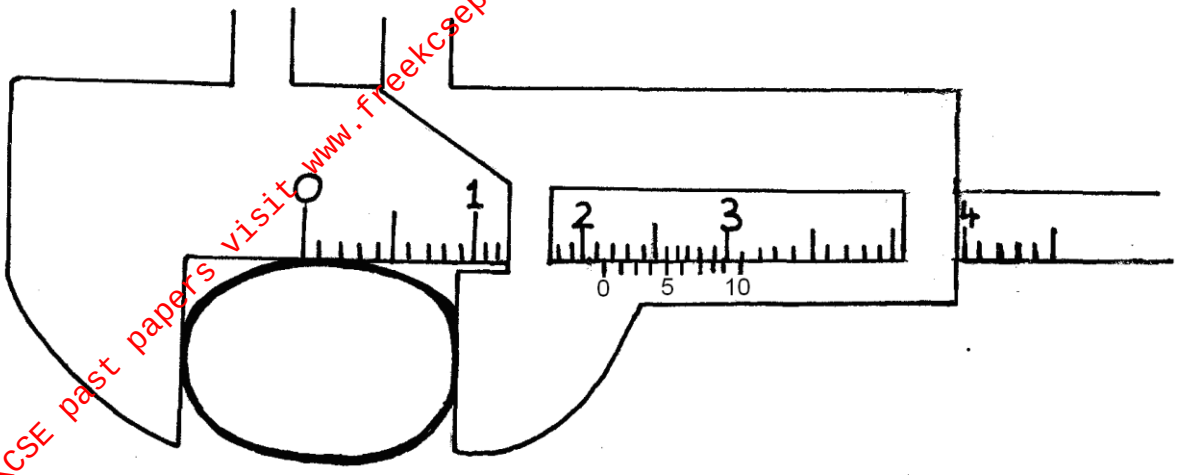
1. Write your index no in spaces provided.
2. This paper consists of two sections A and B
3. Answer all questions in the spaces provided
4. Non-programmable calculators and mathematical tables may be used
5. Show all your workings

SECTION	QUESTION	MAX. SCORE	CANDIDATES SCORE
A	1 – 11	25	
B	12	14	
	13	14	
	14	10	
	15	9	
	16	8	
	TOTAL	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 (25 MARKS)

1. (i) What is the name of the instrument shown below (1mk)



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(ii) If the instrument has zero error of 0.04cm, find the diameter of the sphere (2mks)

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2. A block of copper of mass 2kg and specific heat capacity of 400J/kg/K initially at 121^0C is immersed in water at 20^0C. If the final temperature is 21^0C, determine the mass of water. (specific heat capacity of water is 4200J/kgk) (3mks)

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3. Sketch a graph of velocity against time of a steel ball which is dropped to fall through glycerine in a measuring cylinder (3mks)

4. Oil drop of mass 1.0 x 10^{-3}kg falls on water and spread out to form a circular patch 1.0m in diameter. Find the density of oil if thickness of the film on water is 1.3 x 10^{-6}m (2mks)

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5. Some water in a tin can was boiled for some time. The tin can was then sealed and cooled. After sometime it collapsed. Explain this observation (2mks)

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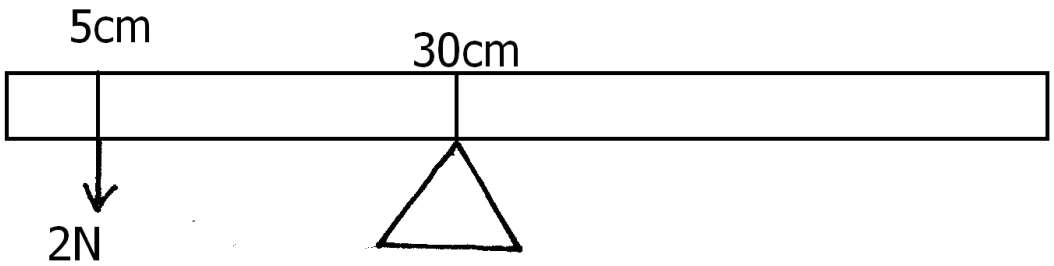
6. The figure below shows a uniform metre rule pivoted at 30cm mark. It is balanced by weight of 2Nsuspended at the 5cm mark.



Determine the weight of the meter rule (3mks)

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7. The weight of a solid in air is 5.0N. When it is fully immersed in a liquid of density 800kgm^{-3} its weight is 4.04N determine the volume of liquid displaced. (2mks)

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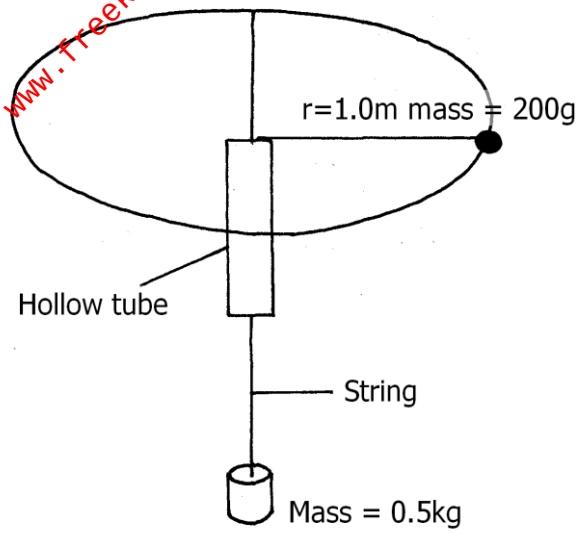
8. The figure below shows a mass of 200g connected by a string through a hollow tube to mass of 0.5kg. The 0.5kg mass is kept stationary in the air by whirling the 200g mass round in a horizontal circle of reading 1.0metre



Determine the angular velocity of the 200g mass (3mks)

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9. A steel ball bearing is allowed to fall freely in a viscous liquid. State the condition necessary for it to attain terminal velocity (1mk)

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10. State reason why heat transfer by radiation is faster than by conduction (1mk)

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11. A body is projected vertically upwards from the top of a building. If it lands on the base of the building, sketch the velocity time graph for the motion (2mks)

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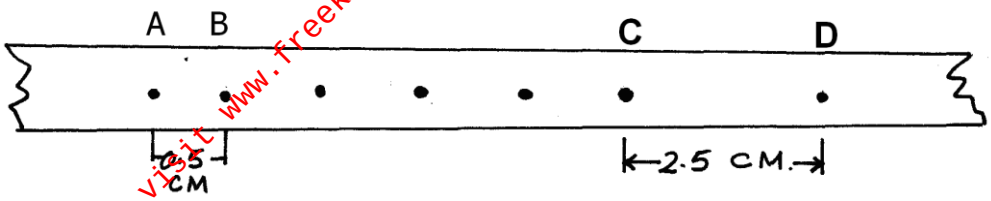
SECTION B

12. The figure below shows the motion of a trolley on a ticker timer. The ticker has frequency of 50HZ



(a) (i) Calculate the initial velocity between A and B (2mks)

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(ii) Calculate the final velocity between C and D (2mks)

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(iii) Calculate the acceleration of the trolley during the motion (3mks)

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(b) A ball is dropped from the top of a vertical cliff 45m high. Given that the velocity just before striking the sandy beach is 30m/s and the ball penetrate the sand to a depth of 10cm. Determine its average retardation. (3mks)

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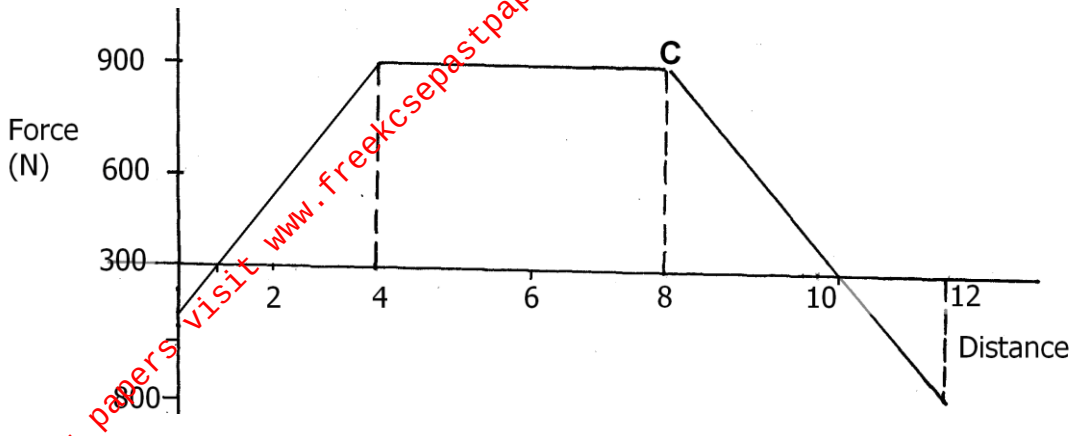
(c) Figure below shows a force distance graph for a car being towed on a level ground



(i) Calculate the total work done (2mks)

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(ii) If the velocity just before reaching point C is 0.6m/s. Calculate the power developed by the engine at this point (2mks)

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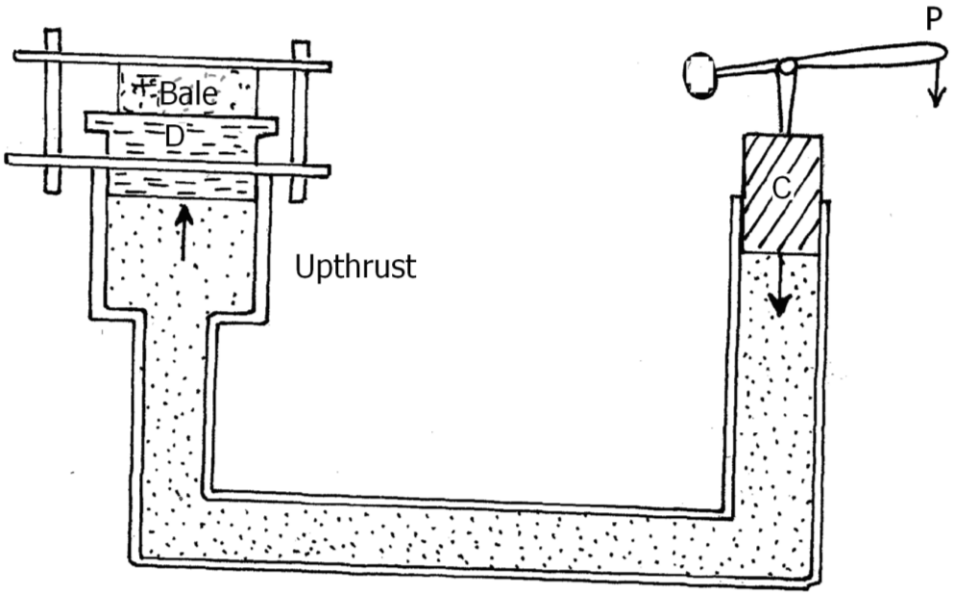
13. The figure below shows a hydraulic press



The two pistons C and D are of areas $100cm^2$ and $2m^2$ respectively. A force of 100N is applied on the smaller piston, find the load that can be lifted on the large piston if :-

(a) The piston has negligible weights and no frictional forces (3mks)

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(b) The small and larger pistons have negligible weights and frictional forces 10N and 40N respectively (3mks)

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(c) The small piston has a weight of 5N, the larger piston has weight of 10N and the frictional forces are negligible (3mks)

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(d) In a hydraulic brake the master piston has an area of $4mm^2$ and the wheel piston each has an area $4cm^2$. Find the forces applied to the wheel when a force of 10N is applied on the master piston (3mks)

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(e) State two properties of the liquid used in the hydraulic system. (2mks)

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14. In an experiment to determine the density of sand using a density bottle, the following measurements were recorded.

Mass of empty density bottle = 43.2g

Mass of density bottle full of water = 66.4g

Mass of density bottle with some sand = 67.5g

Filled up with water (sand, watered bottle) = 82.3g

Use the above information to determine the;

(a) Mass of the water that completely fill the bottle (2mks)

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(b) Volume of water that completely filled the bottle (1mk)

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(c) Volume of the density bottle (1mk)

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(d) Mass of sand (1mk)

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(e) Mass of water that filled the space above the sand (1mk)

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(f) Volume of the sand (2mks)

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(g) Density of the sand (2mks)

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15. (a) Explain why it is advisable to use the pressure cooker for cooking at high altitudes (2mks)

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(b) Water of mass 3kg initially at 20^0C is heated in an electric kettle rated 3.0kw. The water is heated until it boils at 100^0C. Taking specific heat capacity of water to be 4200Jkg^{-1} K^{-1}, heat capacity of kettle = 450J/kg, specific latent heat of vaporization of water = 2.3MJ/kg, calculate

(i) The heat absorbed by the water (1mk)

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(ii) Heat absorbed by the electric kettle (2mks)

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(iii) The time taken for the water to boil (2mks)

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(iv) How much longer it will take to boil away all the water (2mks)

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16. (a) Define angular velocity (1mk)

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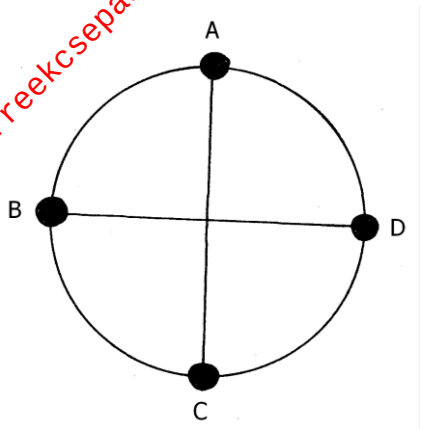
(b) The figure below shows an object of mass 0.2kg whirled in vertical circle of radius 0.5m at uniform speed of 5m/s



Determine the tension in the string at

(i) Position A (3mks)

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(ii) Position B (3mks)

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(iii) At what point is the string likely to cut. Explain (2mks)

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