Name: …… **Index No. ……**

School: …… **Candidate's Sign. …….....**

Date: …….....

232/1
PHYSICS
PAPER 1
JULY/AUGUST 2011
TIME: 2 HOURS

NDHIWA DISTRICT 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.
- **retype**

For Examiners' Use Only

SECTION	QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
Section A	1-14	25	
Section B	15	10	
	16	14	
	17	09	
	18	12	
	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 (25MARKS)

Answer all the questions in this section in the space provided

1. State any **two** factors that determine the choice of instrument for measuring length (2mks)

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2. Explain o**ne** advantage of alcohol over mercury as a thermometric liquid. (1mk)

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3. vernier calipers with a zero error of -0.02 gave the diameter of a marble as 1.67cm.

(i) Define the term zero error (1mk)

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(ii) use the above information to determine the vernier scale reading of the calipers. (1mk)

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4. State the pascal's principle for transmission of pressure in liquids. (1mk)

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5. A girl carries 20 litres of water in a jerrycan on her head and walk fro 200m on a horizontal level ground. Explain why the girl does no work (assume air resistance is negligible). (1mk)

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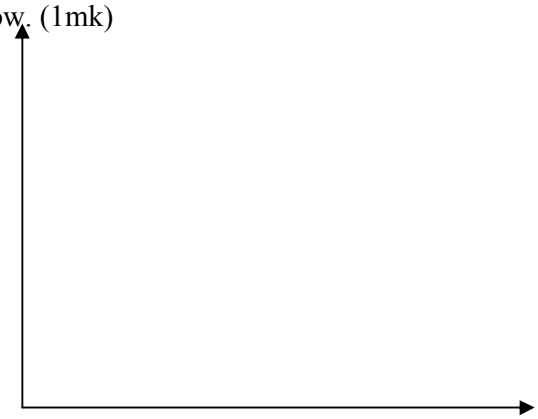
6. Pure water at 0oC is heated up to 10oC Sketch the graph of density against temperature axes given in fig.1 below. (1mk)

Fig 1



7. Two springs of negligible weights and spring constants 50N/m and 75N/m respectively are connected in series and suspended from a fixed point. Determine the total extension when a mass of 7.5kg is hung from the lower end. (3mks)

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8. State one limitation of the gas laws. (1mk)

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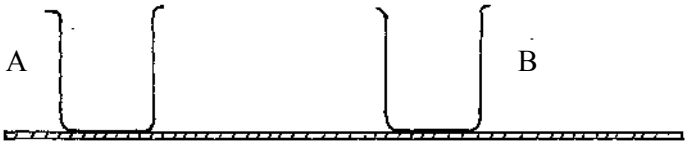
9. In an experiment **two** metal tins A and B were placed on an insulating stand as shown in figure 2 below Tin A was painted black while tin B polished shiny; on the outside.

Fig 2



Hot water at 90°C was poured into both tins at the same time and the tins covered by identical cardboards. The temperature of water in both tins was recorded at equal time intervals .

(i) Suggest an appropriate aim of the experiment. (1mk)

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(ii) State any two conditions that should be considered in order for the set up to give the intended results. 2mks)

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10. A trolley is moving at a constant speed a long a straight horizontal path. A piece of plasticine is dropped on the trolley and it sticks on it. State and explain the resultant motion of the trolley given that the mass of platicine is a quarter that of the trolley.
(2mks)

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11. A marble of mass 50g attached to a light inextensible string of length 80cm is rotated in a vertical plane. The string cannot bear a load of more than 2N. Determine the maximum velocity that the marble can move before the string snaps. (3mks)

12. A thick glass vessel is dipped in boiling milk for some time. The glass is removed from the hot milk and water at 10°C is poured into it immediately. Explain why the glass is likely to crack. (2mks)

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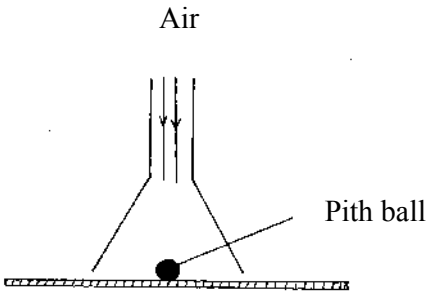
13. The diagram figure 3 below shows a funnel inverted over a light pith ball on a table. Air is blown into the funnel as indicated on the diagram.

Fig 3



State and explain what is likely to be observed. (2mks)

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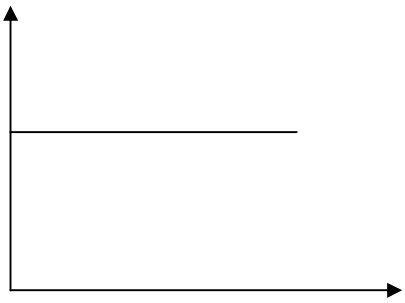
14. The diagram figure 4 below shows a graph of relatiosnship derived from Boyle's law between pressure (P) and Volume (V) of a fixed mass of gas

fig. 4



On the diagram, name the quantities on the axes. (1mk)

SECTION B (55MARKS)

Answer all the questions in this section.

15. (a) Use kinetic theory of matter to differentiate between solids and liquids. (2mks)

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(b) An oil drop at room temperature is placed on the surface of water in a trough. The drop spreads to form a circular patch of area $154cm^2$. 150 such drops occupy a volume of $0.1cm^3$.

(i) Explain the observation that the oil spreads into a patch. (2mks)

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(ii) use the above information to estimate the size of an oil molecule. (3mks)

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(iii) Give one reason why the value obtained in (ii) above in but an estimate. (1mk)

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(iv) If the temperature of the oil drop is raised above room temperature, and then placed on the water surface state and explain what is likely to be observed in terms of the size of patch formed. (temperature of water is the same as that of oil) (2mks)

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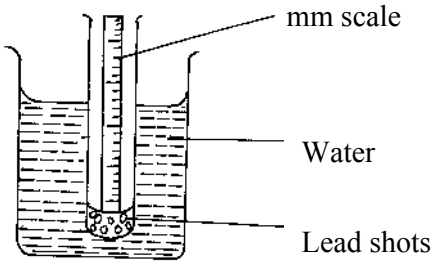
16. (a) A test tube of uniform cross-section is loaded so that it can float upright in water figure 5 below.

Fig 5



(i) Describe how the test tube above may be catibrated to measure densisty of liquid . (5mks)

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(ii) On the same diagram indicate the position of the Zero mark on the mm scale if it is calibrated to measure density. (1mk)

(iii) Give a reason for the position of the zero mark indicated in (ii) above. (2mks)

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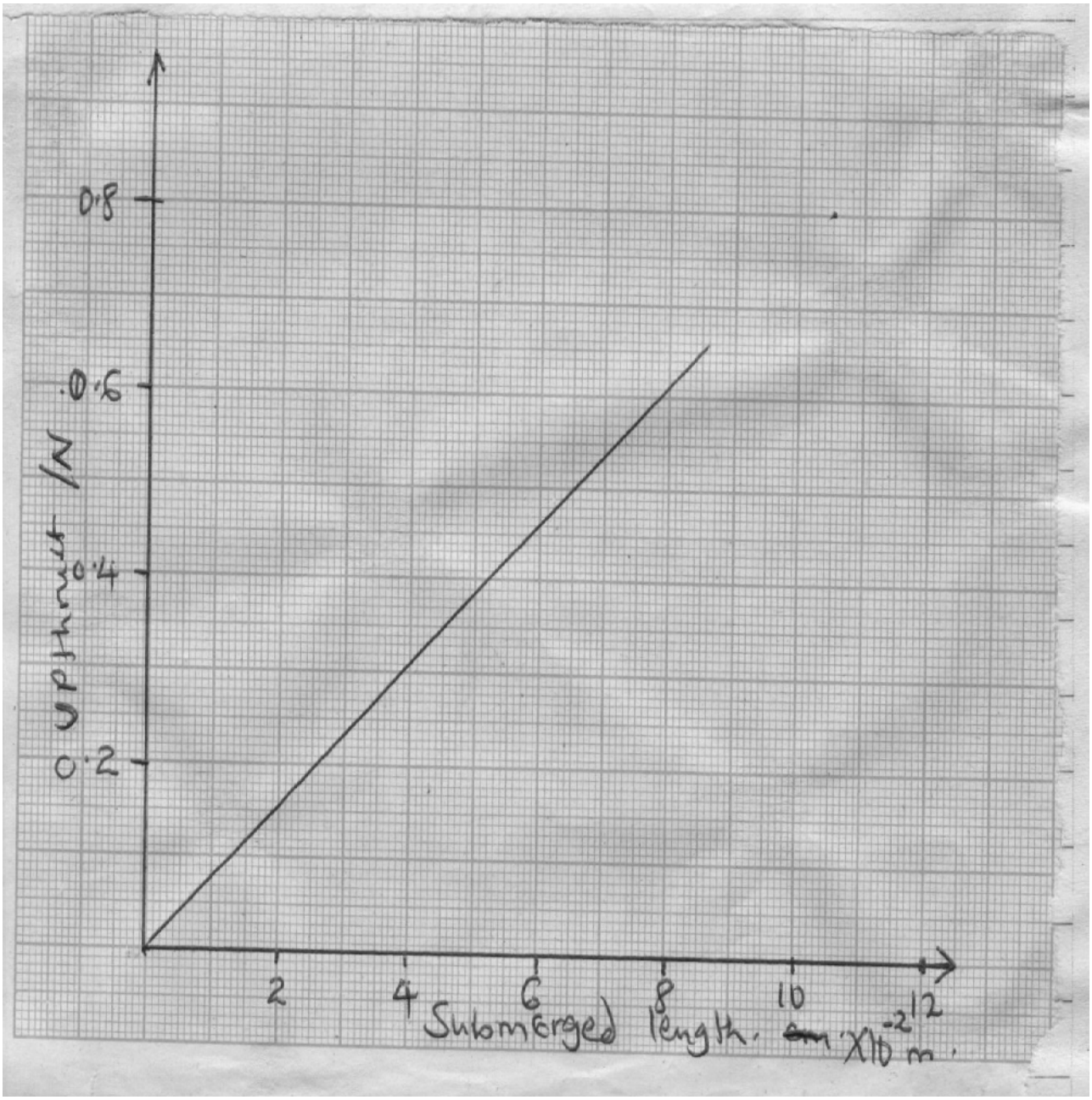
(b) in an experiment to determine the density of a liquid a uniform metal cylinder of cross-section area $6.2cm^2$ was hang from a spring balance and lowered gradually into the liquid. The upthrust was determined for various submerged lengths. The results obtained are shown on the graph figure 6. below.

Fig 6



Use the graph to

(i) determine the upthrust when the cylinder is fully immersed if it length kis 10.5 cm. (2mks)

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(ii) determine the density of the liquid . (5mks)

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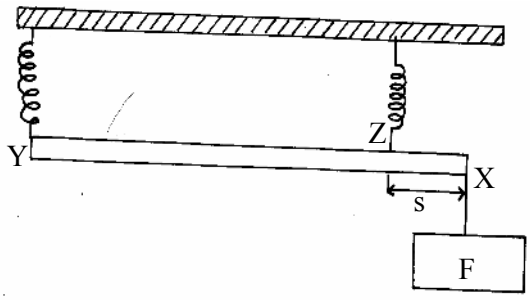
17. The figure 7 below shows a uniform meter rule of weight 1.0N suspended from two spring balances. A load F is attached to the extreme right end X. The spring balance attached to the left endof the rule Y reads 0.25N. the spring balance attached at Z a distance s from the right end reads 1.25N.

Fig 7



mm scale

(i) Calculate the mass of the load F (3mks)

(ii) Determine the value of distance s by taking moments about Z. (3mks)

(b) (i) Explain two factors that affect the stability of an object. (2mks)

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(ii) Differentiate between moment and momentum. (2mks)

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18. (a) Distinguish between heat capacity and specific heat capacity of a substance. (2mks)

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(b) A beaker contains 0.25kg of water at 15°C. 0.025kg of ice at 0°C is added to the water which is stirred until all the ice melts.

(i) How much heat is needed to melt the ice? (2mks)

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(ii)Calculate the lowest temperature of the mixture. What assumptions have you made? (4mks)

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(c) Define boiling point of a liquid. (1mk)

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19.) a) (i) State Newton's second law of motion. (1mk)

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(ii) Use Newton's second law of motion to show that impulse is change in momentum. (2mks)

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b) A carof mass 900kg traveling at 20m/s is brought to rest in 7 seconds. Calculate

(i) the average retardation of the car. (2mks)

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(ii) the average braking force. (2mks)

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c) Explain why a fisherman may fall into the water if he jump a shore from a floating boat. (3mks)

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d) Differentiate between elastic collisions and inelastic collisions . (2mks)

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