NAME:……..……..INDEX NO:……

CANDIDATE'S SIGNATURE……

DATE…….

232/1
PHYSICS
PAPER 1
JULY/AUGUST 2008
TIME: 2 HOURS

MOLO DISTRICT MOCK EXAMINATION
Kenya Certificate of Secondary Education 2008

232/1
PHYSICS
PAPER 1
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INSTRUCTION TO CANDIDATES

- *Write your name and index number in the spaces provided above.*
- *Sign and write the date of examination in the spaces provided*
- *This paper consists of TWO sections A and B*
- *Answer ALL the questions in sections A and B un the spaces provided*
- *ALL working MUST be clearly shown*
- *Mathematic tables and electronic calculators may be used.*

Take g = $10m/s^{-2}$

FOR EXAMINERS USE ONLY

Section	Question	Maximum Score	Candidate's Score
A	1- 13	25	
B	14 15 16 17 18	11 12 09 11 12	
		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)

Answer ALL the questions in this section in the spaces provided

1. Figure 1(a) represents a Voltmeter before being connected across a battery while figure 1(b) represents the same Voltmeter after being connected across a battery.

Figure 1

Determine the voltage of the battery (1mk)

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2. State the principle of conservation of energy (1mk)

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3. **Figure 2** represents a garden sprinkler

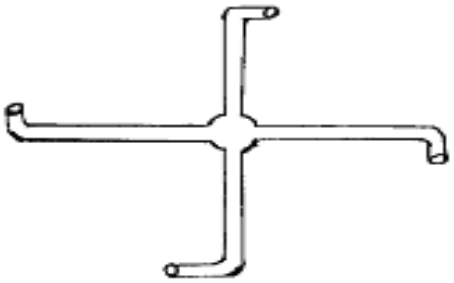

Figure 2

On the same figure indicate the direction of rotation of the sprinkler when water is ejected through the nozzles at a high velocity (1mk)

4. **Figure 3** shows a uniform cuboid block of mass 600g on which a weightless 50cm long wooden plank is fixed.

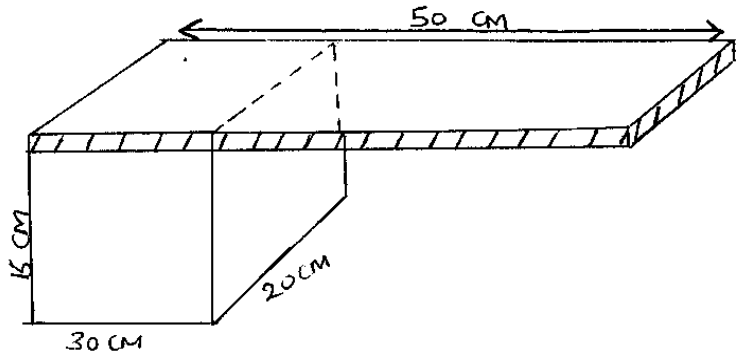

Figure 3

If the cuboid block is of dimensions 30cm x 20 cm x 15 cm find the minimum force F applied at the end of the plank as shown, to tilt the cuboid block (3mks)

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5. Use the kinetic theory to explain thermal expansion of solids (3mks)

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6. A part from the angle of banking and the radius of the curve, name one other factor that affects the critical velocity of a vehicle negotiating a bend. (1mk)

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7. A body weighs 1960N on the surface of the earth. The same body weighs 1470N on the surface of another planet. Determine the acceleration due to gravity on the surface of the planet. Take acceleration due to gravity on the surface of earth, g =10N/Kg. (3mks)..

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8. Metals are better thermal conductors than non-metals. Explain (1mk)

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9. The graph in **figure 4** represents part of a displacement – time graph of a motion described by a body moving at constant velocity.

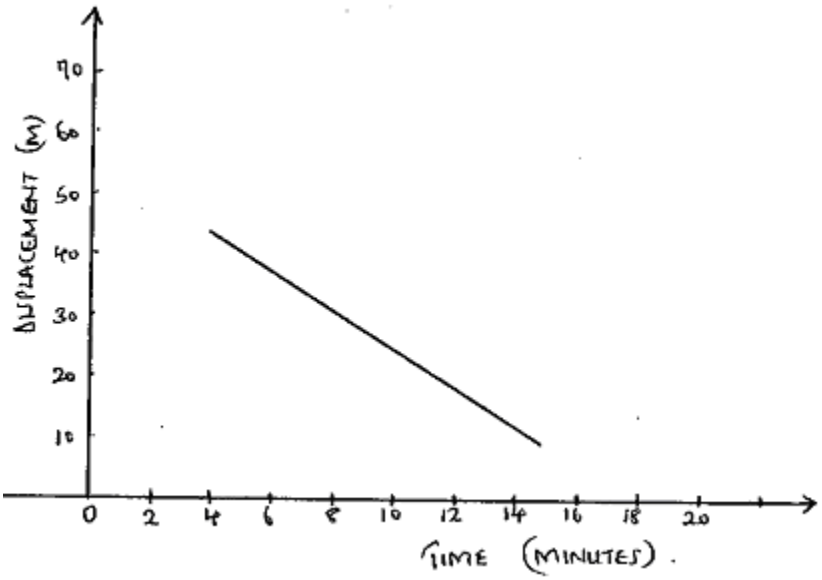

Figure 4

(a) Use the graph to determine the initial displacement of the body. (1mk)

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(b) Describe the motion of the body (2mks)

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10. The atmospheric pressure at the foot of Mt. Longonot is 760mm of mercury while at the peak of the mountain; the atmospheric pressure is 580mm of mercury. Given that the density of mercury is 13600Kg/m^3, Calculate the height of the mountain (density of air = 1.3 Kg/m^3.) (3mks)

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11. **Figure 5** shows a bimetallic strip.

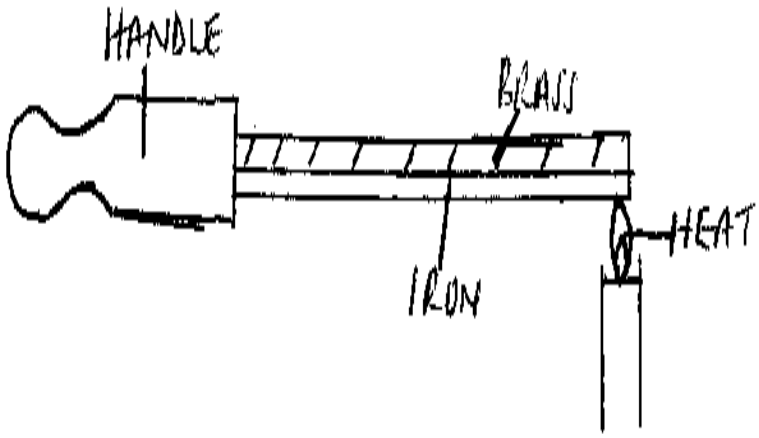

Figure 5

Draw the final shape of the bimetallic strip when heated at its tip as shown (1mk)

12. **Figures 6 (i) and 6(ii)** show two identical pulleys A and B supporting equal loads.

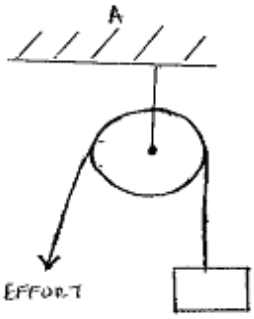

Fig 6 (i)

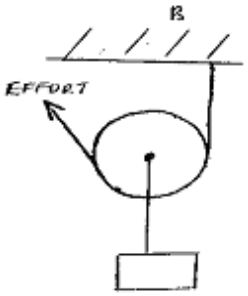

Fig 6 (ii)

State with reason(s) which of the two pulleys is easier to operate (3mks)

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13. State one assumption made when estimating the size of an oil molecule using the oil-patch experiment. (1mk)

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SECTION B: (55 MARKS)

Answer ALL questions in this section in the spaces provided.

14. (a) State Charles Law of gases (1mk)

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(b) You are provided with a capillary tube sealed at one end containing concentrated sulphuric acid index, a thermometer, a rule, a stirrer, source of heat, retort stand, rubber band and a water bath.

(i) Using a well labeled diagram briefly describe an experiment you can perform using the apparatus to verify Charles Law.

(ii) Explain the other use of concentrated sulphuric acid other than a pointer and trap of air. (1mk)

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(c) The volume of a gas at 70^0C is 6 x 10^{-3} m^3. The gas is cooled at constant pressure until its volume is 0.0014m^3. Find the final temperatures of the gas. (3mks)

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15. **Figure 7** shows a set-up used to investigate compressional property of a spring.
The shaft moves freely through a hole in the stand to support the pan. Weights are then added onto the pan each at a time and the length of the spring L noted for various weights in the table below, figure 8,

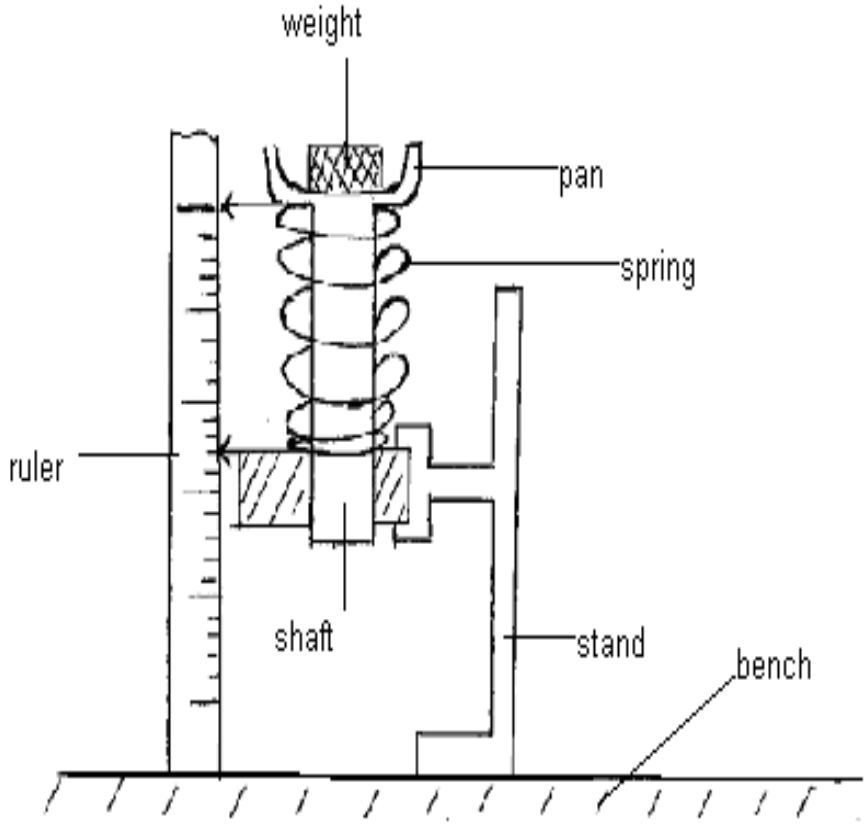

Fig 7

Load N	2	4	8	10	14	16	18	20	22
Length (L) x 10^{-2}m	27	24	18	15	9	7	6	6	6

(a) On the grid provided plot the graph of length L (cm) (Y – axis) against the load (N). NB: Use a scale of 1:2 (X-axis) and 2: 5 (Y – axis) (5mks)

(b) Use your graph to determine;

(i) The spring constant (3mks)

(ii) The length of the unloaded spring, Lo. (1mk)

(c) Find the extension that a mass of 550g would produce on the spring if suspended from its lower end. (3mks)

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16 (i) State Bernoulli's principle of fluids (2mks)

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(iii) **Figure 8** below shows cross – sections of two submerged bodies A and B inside water in a swimming pool. The bodies were then fast pulled in the direction shown by the arrows.

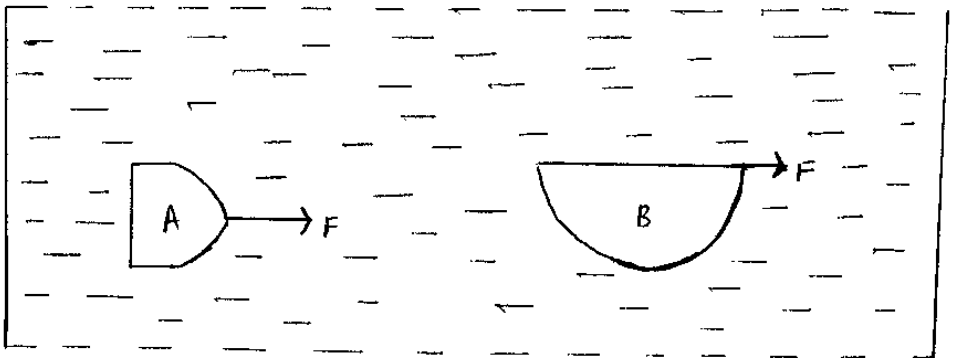

Figure 6

Use the figure to answer questions a and b below.

(a) State with a reason which body is easier to pull if they have equal volume and density. (2mks)

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(b) On the same diagram show the path followed by each body (2mks)

(iii) Water flows steadily in a pipe as shown in **figure 9** below. The diameters at A and B are given.

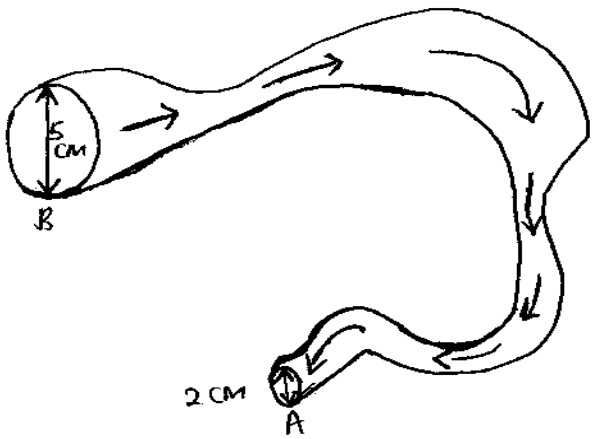

Figure 7

If the volume flux at A is $45cm^3/s$, find the speed of the water at B. (3mks)

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17. (a) State Archimedes' principle (1mk)

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(b) **Figure I0** shows a solid cylinder floating between two liquids A and B of densities $0.8g/cm^3$ and $1.2g/cm^3$ respectively. Half of its volume sinks in liquid B as shown. The cylinder has a diameter of 7cm and a length of 12cm. uses it to answer questions that follows.

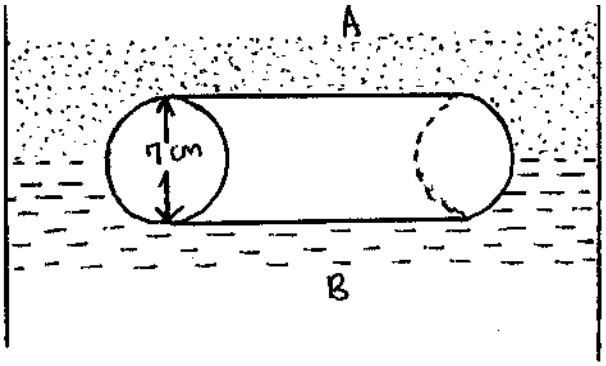

Figure 8

Find;

(i) The volume of the liquid B displaced (2mks)

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(ii) Upthrust on the cylinder due to liquid B (3mks)

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(iii) Upthrust on the cylinder due to liquid A (3mks)

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(iv) The mass of the cylinder (2mks)

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18 (a) i) **Define** latent heat of fusion of a substance (1mk)

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(ii) 83.6 Kilojoules of heat was lost in cooling an amount of water at 15^0C to ice at -10^0C. **Find** mass of the water (specific heat capacity of water 4.2 x 10^{-3}JKg^{-1}K^{-1} specific heat capacity of ice = 2.1 x 10^2JKg^{-1}K^{-1}, Latent heat of fusion of water = 3.3 x 10^5JKg^{-1}) (5mks)

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(b) **Figure 11** shows a six maximum and minimum thermometer in a room. Use it to answer questions that follow.

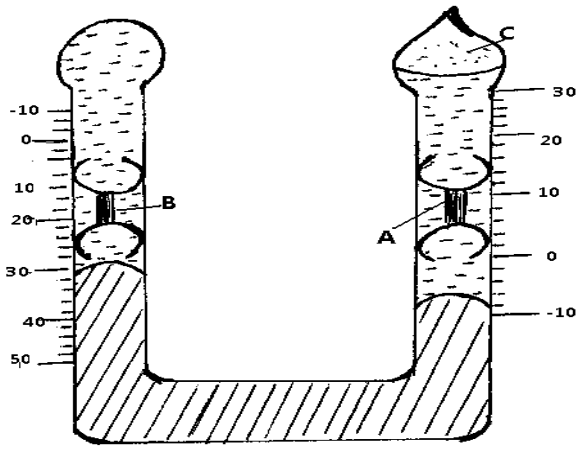

Figure 9

(i) State the function of part marked A. (1mk)

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(ii) State and explain the function of part C. (2mks)

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(iii) Explain what is observed in the thermometer if it is placed in a colder refrigerator. (2mks)

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(iv) State the type of material suitable for part B. (1mk)

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