

Name.....

Adm No.

Stream.....

232/1

PHYSICS

Paper 1

March / April - 2018

Time: 2 Hours

IMMACULATE CONCEPTION BOYS HIGH SCHOOL-MUKUYU END TERM ONE EXAMINATION-2018

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

PHYSICS FORM THREE

INSTRUCTION TO CANDIDATES

- Write your name and admission number in the spaces provided above.
- This paper consists of TWO sections A and B.
- Answer ALL Questions in sections A and B in the spaces provided.
- ALL workings MUST be clearly shown
- Mathematical tables and electronic calculators may be used.

For Examiner's Use only

SECTION	QUESTION	MAXIMUM SCORE	CANDIDATES SCORE
A	1-12	25	
B	13	12	
	14	12	
	15	9	
	16	8	
	17	8	
	18	6	
	Total score	80	

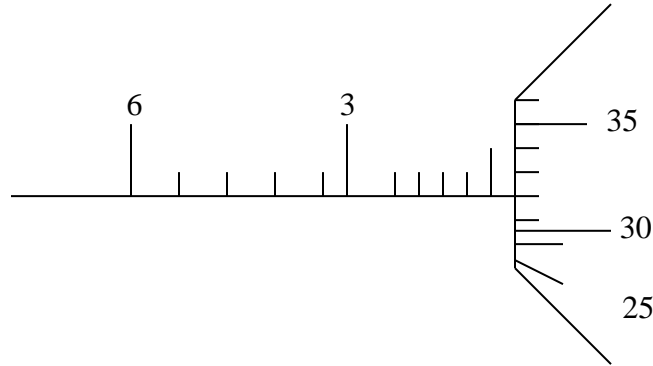
This paper consists of 12 printed pages.

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 questions in this section in spaces provide

1. The figure below shows a scale of past micrometer screw gauge whose zero error is -0.07



What is the actual value of the length being measured (2 marks)

.....
.....
.....
.....
.....

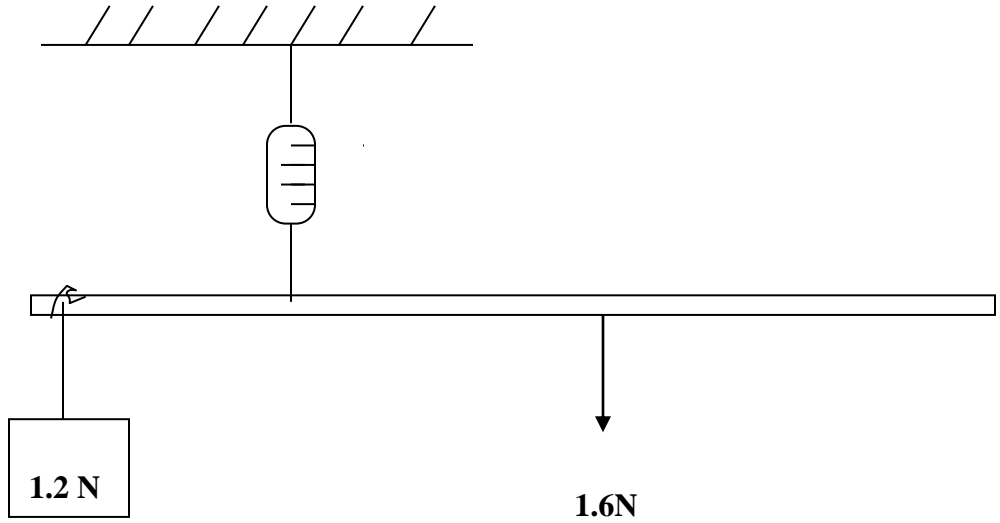
2. A bathroom shower has holes each 2.5 mm^2 in area. Water flows from a pipe of cross-sectional area of 10 cm^2 at 5 m/s to the shower. Determine the speed of the spray. (2 marks)

.....
.....
.....
.....

3. One end of metal is heated in a flame. Very soon the other end becomes hot. Explain this observation (1 mark)

.....
.....
.....
.....

4. The figure below shows a uniform metre rule of weight 1.6 N, supported by a spring balance at 3 cm mark. The metre is balanced horizontally by 1.2N weight suspended on the rule.



- (i) Find the point where 1.2N is suspended (2 marks)

.....

.....

.....

.....

.....

- (ii) The reading on the spring balance (1 mark)

.....

.....

.....

.....

5. A stone is thrown vertically upward with an initial velocity 14m/s neglecting air resistance find the time before it reaches the ground (2 marks)

.....

.....

.....

.....

6. Give two evidence showing matters is made up of small particles (2 marks)

.....
.....
.....

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

.....
.....

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

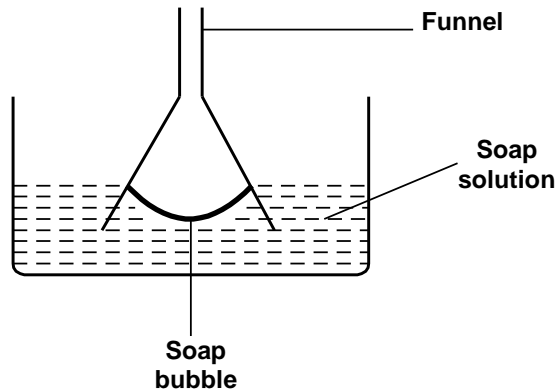


Fig. 2

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

.....
.....

8. Figure **below** shows air flowing through a pipe of non-uniform cross-sectional area. Two pipes A and B are dipped into liquids as shown.

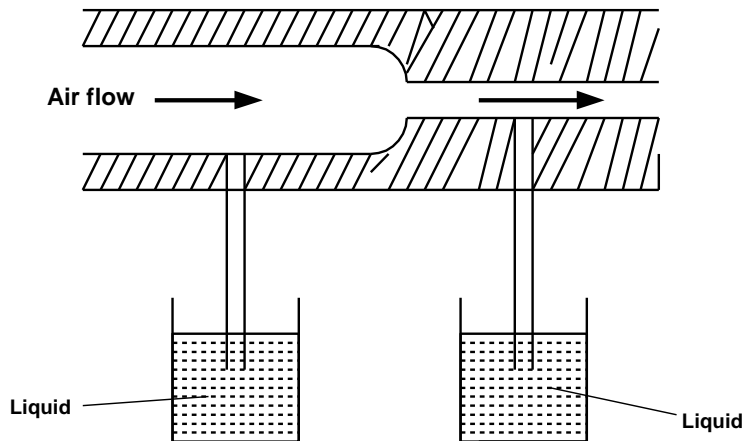


Fig. 7

a) Indicate the levels of the liquids in Pipe A and pipe B. (1 mark)

b) Explain your answer in 11 (a) above.

(1 mark)

.....

.....

.....

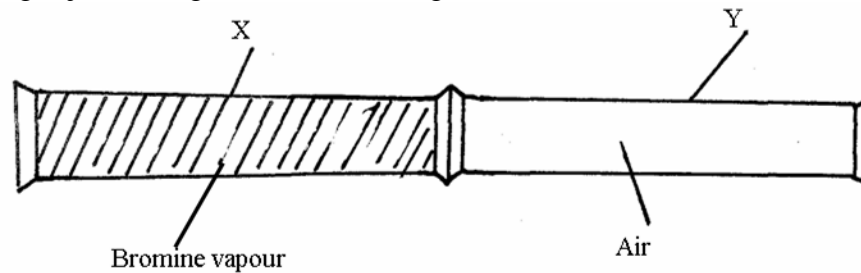
9. When calibrating a liquid in glass thermometer, it is normally not advisable to dip the bulb in boiling water when getting the upper fixed point. Explain why it is so. (2mks)

.....

.....

.....

10. Bromine vapour which is reddish in colour and air were trapped in gas jars X and Y and the two gas jars arranged as shown in Figure below



Explain what is observed if the jars are left for sometime without lids. (2mks)

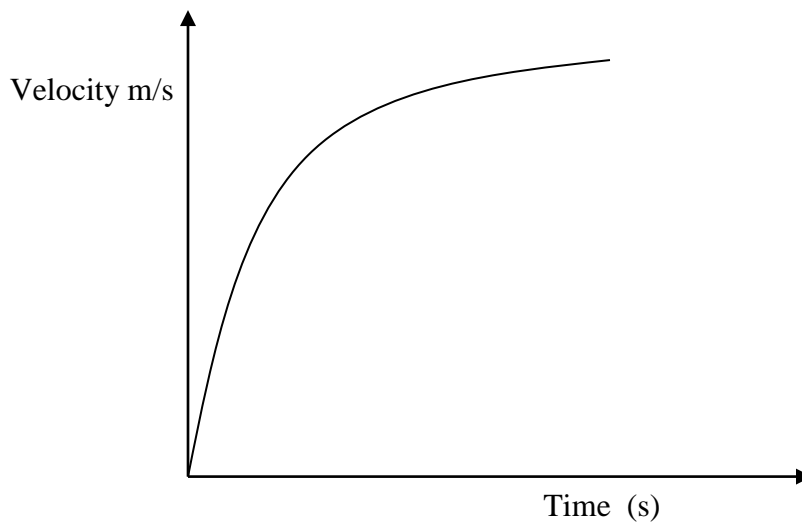
.....

.....

.....

.....

11. The graph in figure below shows the motion of a ball bearing falling though glycerine in a long glass jar.



(a) On the same axes draw the graph of the motion of the same ball falling through water (1 mark)

(b) Show all the forces acting on the ball bearing while falling through the liquid (3 marks)

.....
.....
.....
.....
.....
.....

12. How is velocity different from speed ? (1 mark)

.....
.....
.....

SECTION B (55 MARKS)

Answer all questions in this section in spaces provide

13. a) (i) State the principle of moments. (1mark)

.....
.....
.....
.....

(ii) A uniform metre ruler has a mass of 300g and is pivoted freely at the 0cm mark. Determine the force which should be applied vertically upwards at the 55cm mark to maintain the ruler horizontally. (3marks)

.....
.....
.....
.....
.....
.....
.....
.....
.....

b) Figure 9 below shows a piece of tape pulled through a ticker – timer by a trolley down an inclined plane. The frequency of the ticker-timer is 100Hz.

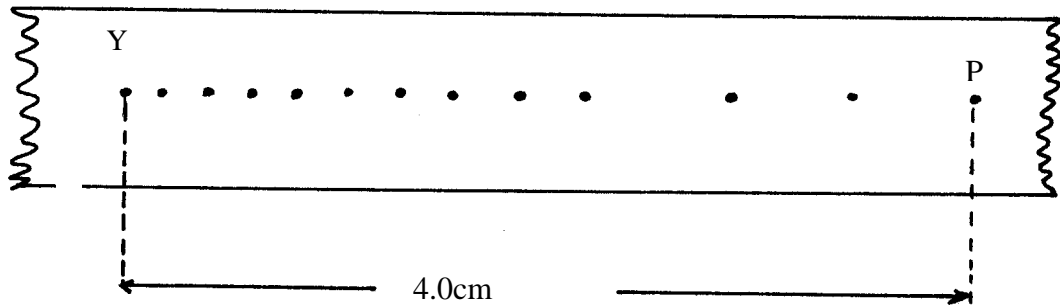


Fig. 9

(i) Find the time between two dots. (1mark)

.....

.....

.....

.....

(ii) Determine the average velocity of the trolley between Y and P. (3marks)

.....

.....

.....

.....

.....

.....

.....

.....

.....

14. a) i) State the law of conservation of energy. (1 mark)

.....

.....

ii) State the energy changes which occur when one switches on a torch. (2 marks)

.....

.....

iii) Distinguish between Kinetic energy and potential energy. (1 mark)

b) A 3.0g bullet moving at 350 ms^{-1} hits a tree and slows down uniformly while penetrating a distance of 12 cm.

i) Determine the force exerted on the bullet to bring it to rest. (3 marks)

ii) What assumption did you make in answering (i)? (1 mark)

15. a) A drop of olive oil is placed on the surface of water in a large dish. The oil spreads out to form a circular film.

i) State the measurement to be made in order to find the area of the film. (1 mark)

ii) What else need to be known for the thickness of the oil film to be found? (1 mark)

b) i) State the law of conservation of linear momentum. (1 mark)

.....

ii) A truck of mass 5000 kg and traveling at 5 ms^{-1} collides and couples with a stationary truck. They travel off together at 0.5 ms^{-1} . Determine the mass of the stationary truck. (3 marks)

.....
.....
.....
.....
.....
.....

(iii) Determine the of impulse on the 5000kg truck (3 marks)

.....
.....
.....
.....
.....
.....

16. (a) **Define** the term ‘work’

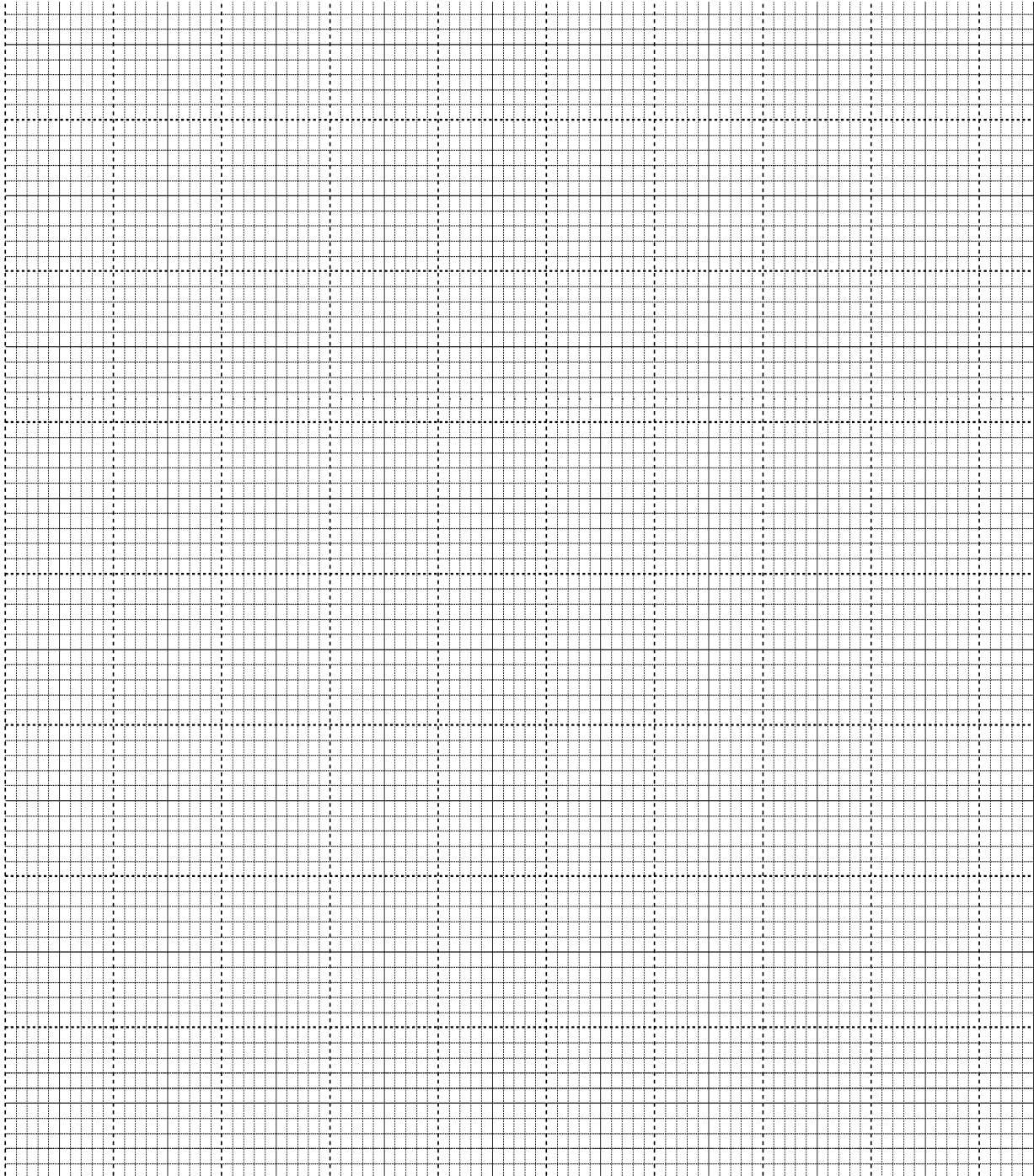
(1mk)

.....

(b) The table below shows the value of extensions of a spiral spring when various forces are applied to it.

Force, F (N)	0	1.0	2.0	3.0	4.0	5.0	6.0
Extension, e (cm)	0	0.8	1.5	2.3	3.1	3.8	4.6

(i) **Plot a graph** of force (y- axis) against the extension (5mks)



- (ii) **Determine** the work done in stretching the spring by 4 cm
(3mks)

.....
.....
.....
.....
.....
.....
.....

- (c) A pump can raise 120 kg of water to a height of 10.0 m every minute. **Determine** the power of the pump.
(3mks)

.....
.....
.....
.....
.....
.....

17. (a) (i) A body is initially in motion. If no external force acts on the body describe the subsequent motion. (1 mark)

.....
.....

- (ii) From Newton's law of motion derive the formula for the relationship between force, mass and acceleration. (3 marks)

.....
.....
.....
.....

- (iii) A car of mass 800kg is initially moving at 25m/s. Calculate the force needed to bring the car to rest over a distance of 20m (4 marks)

.....
.....
.....
.....

- (b) (i) Two trolleys of masses 2kg and 1.5kg are moving towards each other at 0.25m/s and 0.40m/s respectively. The trolleys combine on collision. Determine the common velocity with which they move with if they remained embedded together. (3 marks)

.....

- (ii) In what directions do the trolleys move after collision? (1 mark)

.....

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

.....

- (ii) **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.

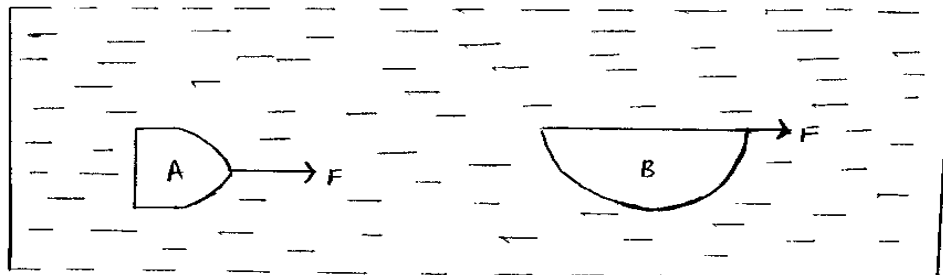


Figure 1

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)

.....

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