232/1
PHYSICS
Paper 1
Time: 2 hours

BAHATI GIRLS HIGH SCHOOL
MOCK EXAM

INSTRUCTIONS TO CANDIDATES.

1. Answer **ALL** the questions in the spaces provided after each question paper.
2. Additional papers must not be inserted. All working must be clearly shown where necessary.
3. Candidates will be penalized for recording irrelevant information and incorrect spelling especially of technical terms.
4. All working must be clearly shown where necessary.

FOR EXAMINER'S USE ONLY

| SECTION	QUESTION	MAXIMUM SCORE	CANDIDATES SCORE
1	1 - 11	25	
2	12	8	
3	13	15	
	14	10	
	15	10	
	16	12	
TOTAL		80	

This paper consist of 5 printed pages

Candidates should check the questions paper to ensure that all the pages are printed, as indicated and no questions are missing.

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SECTION A (25 MARKS)

*Answer **ALL** the Questions in this section.*

1. You place a 7.5kg television set on a spring balance scale. If the scale reads 78.4N, what is the acceleration of gravity at that location? (3 marks)

2. A person watching a stone mason strike a rock hears the sound 4 seconds later. Determine the distance between the mason and the person if the speed of sound in air is 340m/s. (2 marks)

3. Sketch a vernier calliper for an actual reading of 2.10cm if the calliper has a positive error of 0.02cm. (2 marks)

4. A glass funnel is dipped in soap solution, then taken out and blown gently to form a soap bubble as shown below.
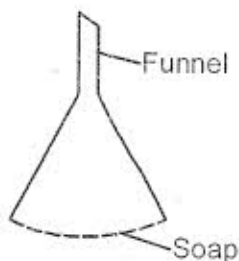
    Explain why the bubble flattens to a film which then rises up the funnel. (2 marks)

5. Why are the bright specks observed in a smoke cell seen to be in continuous random motion? (1 mark)

6. (i) State Boyles Law (1 mark)

    (ii) When an inflated balloon is placed in a refrigerator. State and explain what happens to its volume. (2 marks)

7. State Archimede's principle. (1 mark)

8. Figure below shows a velocity time graph for a car in motion. If the mass of the car is 920kg, determine the maximum kinetic energy acquired for part of the journey shown. (3 marks)

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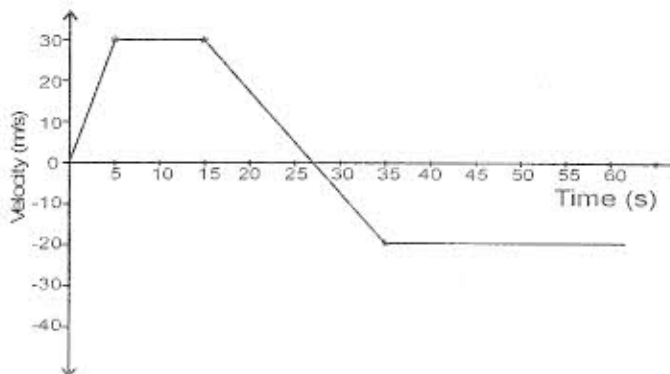
9. A bullet is fired horizontally at a target, neglecting air resistance, give a reason why the horizontal acceleration of the bullet is zero. (1 mark)

10. State two designs applied in making a car radiator. (2 marks)

11. The diagram below shows a simple barometer.
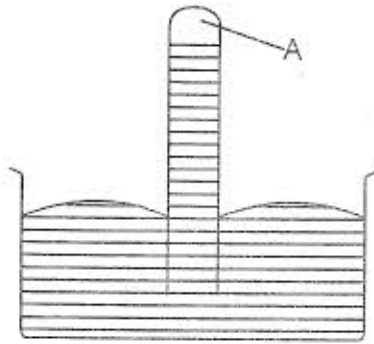
(i) Name the part labeled A. (1 mark)

(ii) Explain what would happen to the level of mercury in the tube if the barometer was taken high up the mountain? (2 marks)

12. A bicycle wheel of radius 28cm moves with a linear velocity of 14m/s. Determine the centripetal force on a pebble of mass _0g on the wheel. (3 marks)

SECTION B (55 MARKS)
Answer All the Questions in this section

13. (a) Distinguish between heat capacity and specific heat capacity. (1 mark)

(b) A 180 watt heater and a thermometer were immersed in 0.5kg of water in a copper calorimeter. The readings were obtained.

Temp °C	30	36	40	45	49	54	57
Time (min)	3	4	5	6	7	8	9

(i) On the graph paper provided plot a graph of temperature against time. (5 marks)

(ii) Using the graph or otherwise.

(a) Determine the room temperature. (1 mark)

(b) The specific heat capacity of water. (3 marks)

(iii) Give one reason why the value obtained for specific heat capacity is more than the expected value. (1 mark)

14. (a) State the principle of moments. (1 mark)

(b) Give one application of moments of a force. (1 mark)

(c) The figure below shows a uniform metre rule of weight. 1.0N suspended from the spring balances. A load is attached to the extreme right hand end C. The spring balance attached to the extreme left hand end of the rule (A) reads 0.25N. The spring balance attached at B a distance X from the right hand end reads 1.25N.
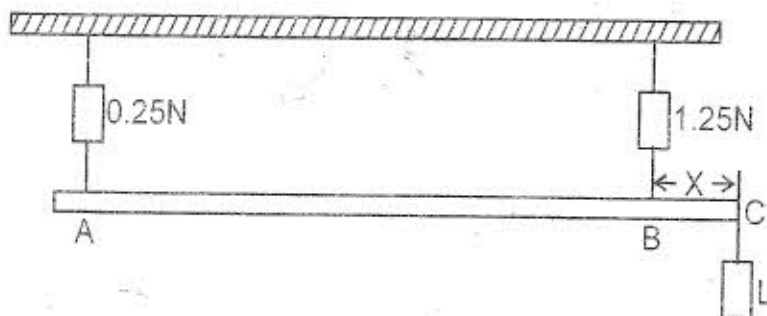
(i) Calculate the weight of load, L. (3 marks)

(ii) Determine the value of distance X. (4 marks)

15. (a) State the law of floatation. (1 mark)

(b) A block of wood of mass 80kg floats in water with 0.6 of its volume in water. Calculate the number of rods each 20g that can be placed on the block so that its top is level with the surface of water. (4 marks)

(c) A piece of metal is suspended from a spring balance and the balance reads 80N. When the metal is immersed in a liquid of relative density 1.2 the spring reads 0.7N. Find;
(i) The mass of the metal. (2 marks)

(ii) The weight of the fluid displaced. (1 mark)

(iii) The density of the metal. (4 marks)

16. (a) Differentiate between work and power. (2 marks)

(b) A man uses an inclined plane to lift a 150kg mass. The length as the inclined plane is 12m, and it makes an angle of 30^0 with the horizontal. If the efficiency of the inclined plane is 80%.
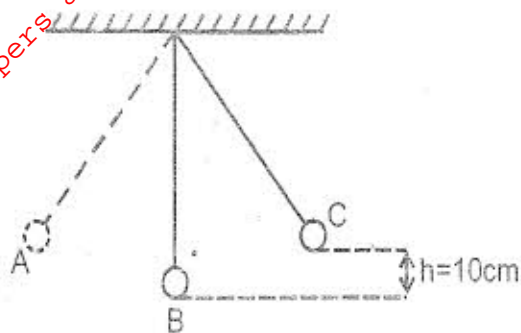Calculate
(i) The velocity ratio. (3 marks)

(ii) The mechanical advantage (2 marks)

(iii) The effort needed to move the load up the inclined plane at a constant velocity.

(iv) The work done against friction. (3 marks)

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17. (a) The diagram below shows a pendulum bob swinging to and fro.

(i) State the position where the pendulum bob has maximum kinetic energy. (1 mark)

(ii) Determine the velocity of the bob at the position identified in a(i) above, if the maximum vertical displacement of the bob is 10cm. (3 marks)

b) (i) What is meant by perfectly inelastic collissions? (1 mark)

(ii) A minibus of mass 1600kg travelling at a constant velocity of 72km/h collides with a stationary car of mass 800kg. The impact takes 2 seconds before the two move together at a constant velocity for 15 seconds. Determine

(I) The common velocity (3 marks)

(II) The distance moved after the impact. (2 marks)