

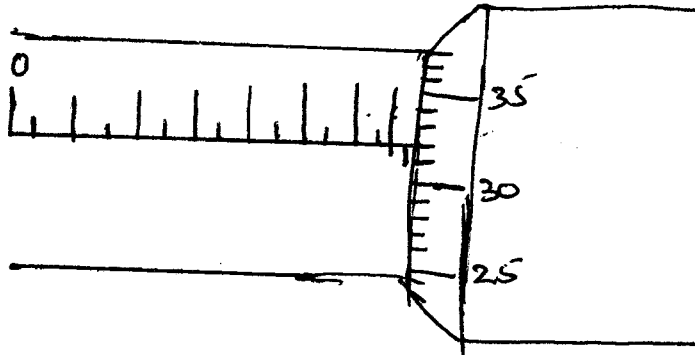
TOTAL MARKS 80

GATITU SECONDARY SCHOOL, P.O. BOX 327 - 01030, GATUNDU.

FORM 3 PHYSICS. MID TERM EXAMINATION. TERM 2 2016.

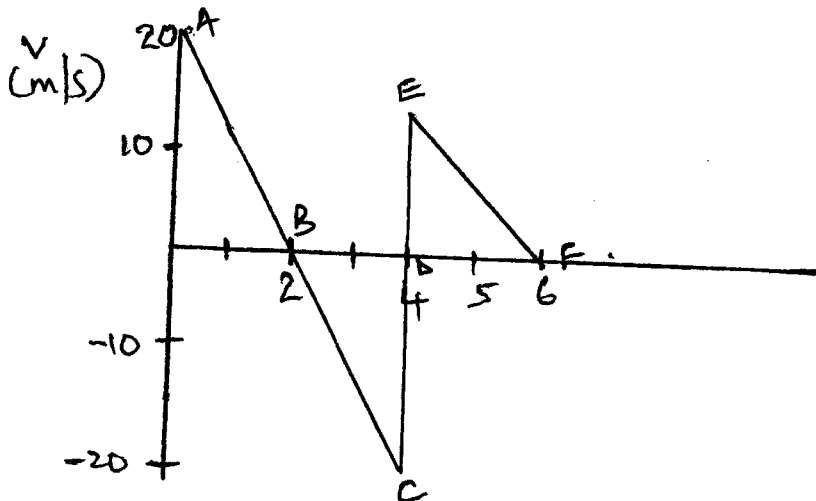
NAME: _____ ADM: _____ CLASS: _____

1. Write down the reading shown below. (2mks)



- b. If the instrument has a zero error of -0.02mm , determine the actual reading of the measurement. (2mks)

2. The graph shows part of the motion of a tennis ball which is projected vertically upwards from the ground and allowed to bounce on the ground.



a) Describe the motion of the ball relating it to different positions of the ball along the following. (8mks)

AB

BC

CD

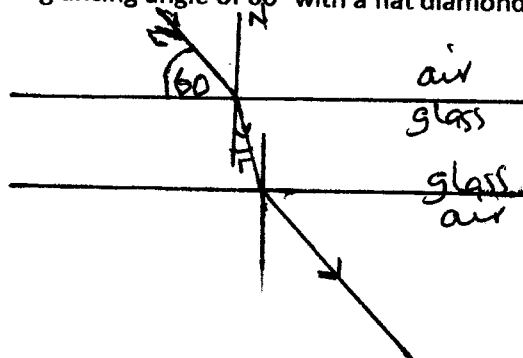
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b) From the sketch graph calculate the acceleration due to gravity. (2mks)

c) How high does the ball rise initially? (2mks)

d) Explain why E is not at the same level as A (2mks)

3. A ray of light makes a glancing angle of 60° with a flat diamond surface as shown.

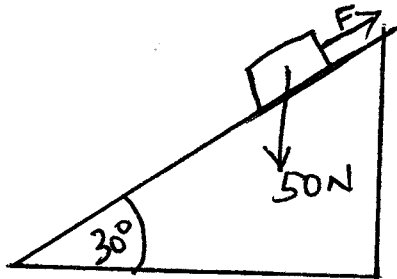


Determine the angle of refraction r on the side of the diamond if the critical angle of diamond is 25° (3mks)

b) Calculate the critical angle whose refractive index is 1.4. (3mks)

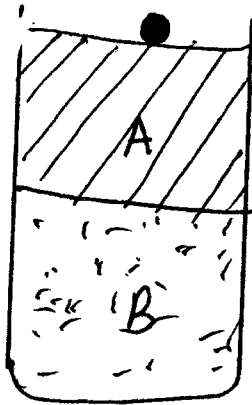
4(a) Define the term momentum and give the SI units. (2mks)

b) The figure below shows a body of weight 50N placed on a surface which is inclined at an angle of 30° to the horizontal. The body experiences a maximum frictional force of 29N with the surface.



Determine the force required to move the body up the incline with constant velocity. (3mks)

5. The figure shows a tall jar containing two fluids A and B. The viscosity of A is higher than that of B. A solid sphere is released at the top of the jar and falls through the fluids. ^{of the jar and falls through the fluids.} sketch a velocity - time graph for the fluids. (2mks)



6. A body resting on a horizontal surface is given an initial velocity (u) so that it slides on the surface for some distance before coming to a stop. The table shows the distances moved by the body for various values of u .

Velocity (u) in m/s	0.2	0.4	0.6	0.8	1.0	1.2
Distance (d) in metres	0.07	0.027	0.056	0.11	0.170	0.20
U^2						

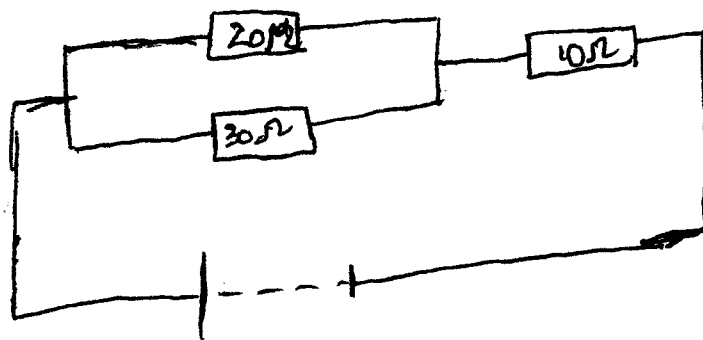
- i) Complete the table for U^2 values (3mks)
- ii) Plot a graph of U^2 against d . (5mks)
- iii) Determine the slope of your graph. (3mks)
- iv) Given that $U^2 = 20\mu d$ where μ is a constant, determine this constant. (3mks)

7. Define the term velocity ratio.

(2mks

8. A gear P has 60 teeth and drives Q with 150 teeth. If the efficiency of the gear system is 75%, find the M.A. (3mks

9. Use the diagram to answer the questions that follow.



a) Determine the total effective resistance.

(3mks

b) Determine the current flowing in the circuit.

(2mks

c) Find the current through
i) 20Ω resistor (2mks)

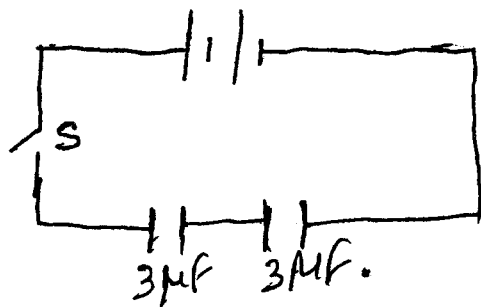
ii) 30Ω coil (2mks)

iii) 10Ω coil (1mk)

10. Distinguish between nodes and antinodes as used in waves. (2mks)

11. Sketch the electric field pattern between two opposite charges placed close to each other. (2mks)

12. The figure below shows a battery of e.m.f 3.0v connected in series with two capacitors.



Determine the charge stored in the combined capacitance when s is closed.

(3mks)

15. Give two properties usually considered when selecting a suitable material for electrical heating.

(2mks)

16. Differentiate between

a) Heat capacity

(3mks)

b) Specific heat capacity.

17. A girl heats 5kg of water to a temperature of 80°C . When she adds m kg of water at 15°C the mixture attains a temperature of 40°C . Determine the value of m . (2mks)

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