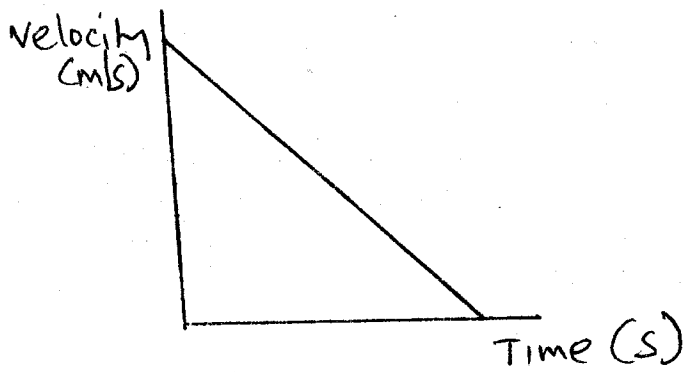
NAME _____ CLASS _____ ADM NO _____

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

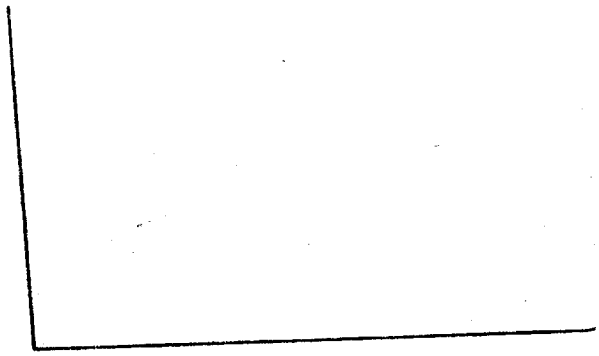
FORM 4 PHYSICS MID TERM EXAMINATION. TERM 2 2015.

1. A body initially moving at 50m/s decelerates uniformly at 2m/s2 until it comes to rest. What distance does it cover from the time it started to decelerate. (3mks

2. The figure shows a velocity-time graph for an object in motion.



Sketch the displacement time graph for the motion. (3mks



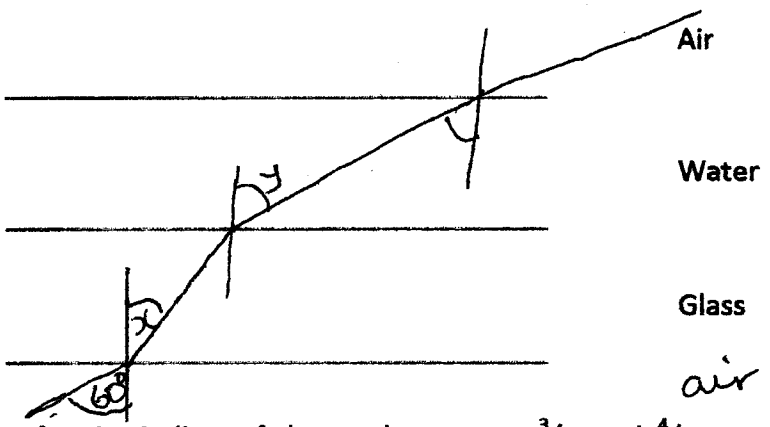
3. Define the following terms. (4mks

i) Refraction

ii) Critical angle

4. A small object lies at the bottom of a water pond at a depth of 1.2m. Given that the refractive index of water is 1.3 determine the apparent depth of the object. (3mks

5. A ray of light PR is incident at R as shown below.



Given that the refractive indices of glass and water are $^{3}/_{2}$ and $^{4}/_{3}$ respectively. Calculate

i) The angles X and Y (2mks

ii) The refractive index for light passing from the water to glass. (2mks

6(i) State Newton's first law of motion. (2mks

ii) Give two differences between elastic and inelastic collision. (4mks

iii) An industrial trolley of mas 20kg carrying a mass of 50kg is acted on by a constant force. The trolley moves a long a horizontal smooth surface with an acceleration of $0.5m/s^2$. Determine the acceleration of the trolley after the mass falls off. (3mks

7a) Draw a diagram of a single pulley system with V.R. of 2. (2mks

b) In an experiment using a pulley system the following results were obtained.

Load)N)	5	10	20	30	40	50
Effort (N)	3	4.5	6.5	3.5	10.5	12.5
% efficiency	33.3	44.4	61.5	70.6	76.5	80
M.A						

i) Complete the table. (3mks

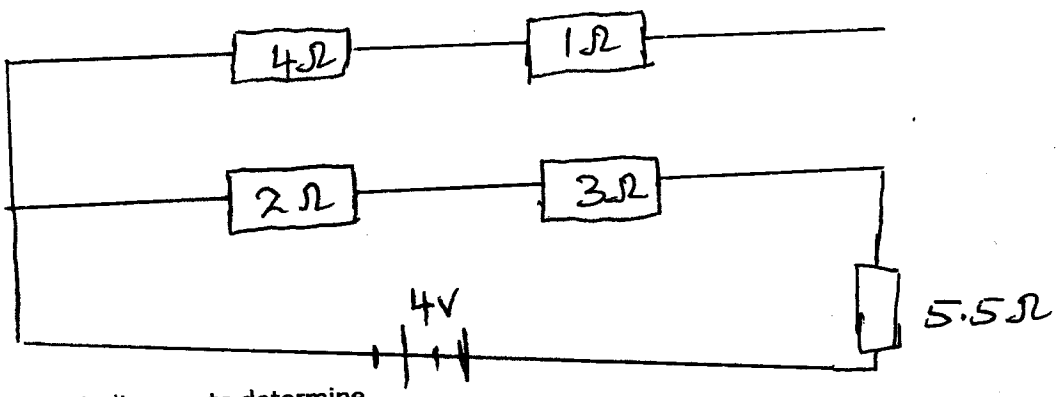
ii) Plot a graph of M.A. against efficiency. (5mks

iii) State the relationship between M.A, V.R and efficiency of a machine. (2mks

iv) The efficiency of a pulley system is always less than 100%. Suggest two methods of improving the efficiency. (2mks

8a) State Ohm's law for a conductor. (2mks

b)

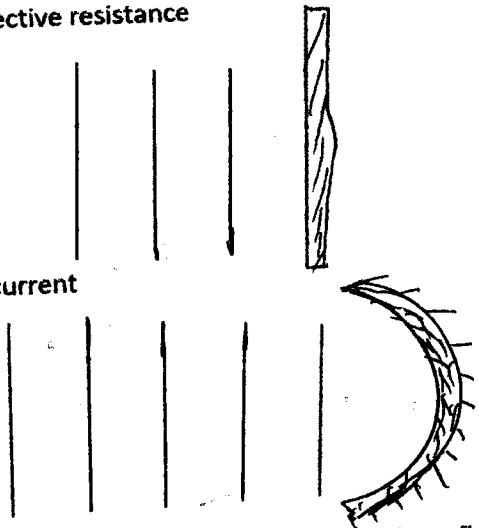


Use the circuit diagram to determine

i) the effective resistance (2mks

ANSWER NO 9 HERE

ii) Total current (2mks



9. Complete the diagram below to show the reflected waves. (2mks

a)

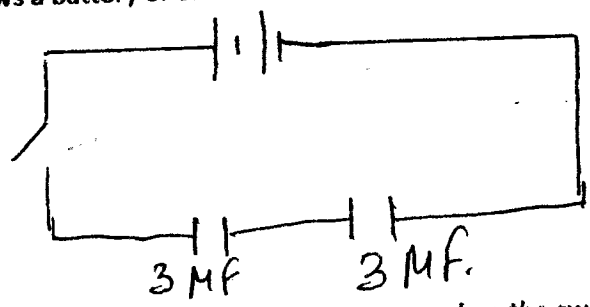
ANSWER NO 8 HERE

b) (2mks

10(i) Explain why it is not advisable to carry a pointed umbrella when it is raining. (2mks

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

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



Determine the charge stored in the combined capacitance when the switch is closed. (3mks

12a) Define electric power (1mk

b) An electric heater is made of a wire of resistance 100Ω and connected to a 240V mains supply. Determine

i) Power rating of the heater. (2mks

ii) the current flowing in the circuit (2mks

iii) Why are filament lamps and bulbs filled with a mixture of nitrogen and argon. (2mks

13. A girl heats 5kg of water to a temperature of 80°, when she adds m kg of water at 15°C the mixture attains a temperature of 40oC. Find M. (3mks

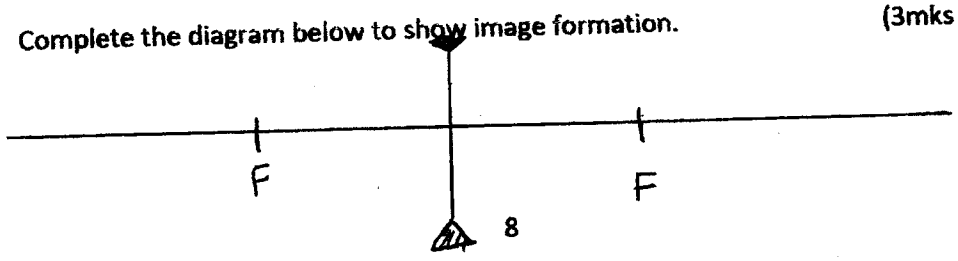
b) A burn from steam is more severe than one from boiling water at the same temperature. Explain. (2mks

14a) State two physical properties of gas that are kept constant during an experiment to verify Boyle's law. (2mks

b) Why does an air bubble increase in volume as it ascends to the surface of a liquid in a boiler? (2mks

15a) State one difference between a thin lens and a curved mirror. (2mks

b) Complete the diagram below to show image formation. (3mks



16. Account for the fact that a body moving around a circle is said to be accelerating and yet the speed is constant. (1mk

17. State two conditions for a body to float on water. (2mks

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REPETITION

18. The table below shows an incomplete electromagnetic spectrum.

Radio waves	Microwaves		Visible light		X-rays

i) Fill in the missing waves. (3mks

ii) State the property of the waves that is increasing from left to right. (1mk

19. State the factors affecting the size of induced current in a coil. (4mks

20. An 8kw heater is used for a total of 1.5 hours a day. Calculate the cost of using the beaker for a month of 30 days if the cost of an electrical unit is ksh. 2.40. (3mks

21. What is the function of the grid in a cathode ray tube. (2mks

22. Give two reasons to show that X – rays are electromagnetic waves. (2mks

23. Differentiate between

i) Work function of a metal and (3mks

ii) Threshold frequency of a metal.

24. Define rectification. (2mks

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