

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

FORM 3 PHYSICS PAPER 2. END OF TERM 3 EXAMINATION. 2014.

NAME: _____ **CLASS:** _____ **ADM NO:** _____

INSTRUCTIONS.

-TIME 2 HOURS.

-The paper consists of two sections A and B.

-Answer all the questions in both sections.

-All working **MUST** be clearly shown.

-Mathematical tables and silent electronic calculators may be used.

SECTION 'A'

1a) Define acceleration and give its SI Units.

(2mks

b) A train slows from 108kph with a uniform deceleration of 2m/s^2 . How long will it take to reach 18kph?

(3mks

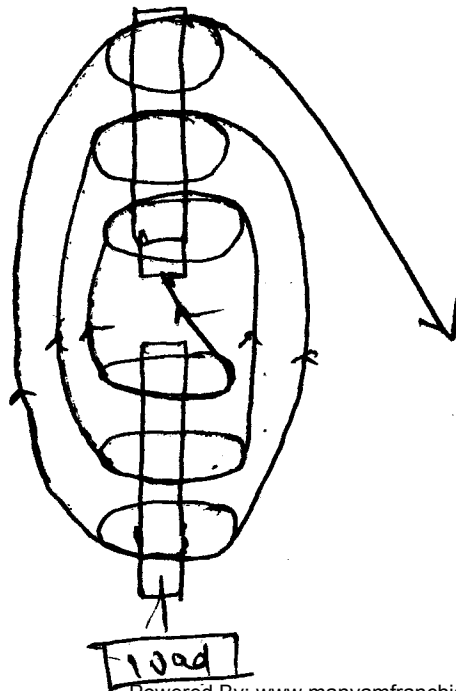
2a) State Bernoulli's Principle.

(2mks

b) Water at a speed of 2m/s is pumped through a hose pipe of diameter 2.8cm to a sprinkler having 21 holes, each with a diameter of 1.4mm . Determine the speed of delivery of the sprinkler. (3mks)

3. Safety belts are mandatory in public vehicles nowadays. Explain scientifically their importance. (2mks)

4. A block and tackle pulley system shown below has an efficiency of 90%. Determine the weight of the lower block if 10N of effort is used to overcome a load of 60N . (4mks)

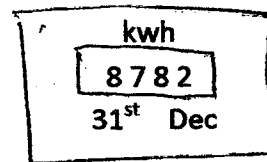
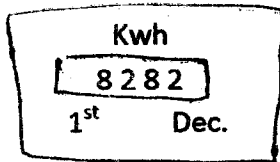


5. Differentiate between a real gas and an ideal gas.

(2mks

b) The pressure of a gas is 4.0×10^5 pascals when its volume is $2.7 \times 10^{-3} \text{m}^3$. Calculate the new pressure when the volume is reduced to $1.2 \times 10^{-3} \text{m}^3$ assuming that there is no change in temperature. (3mks

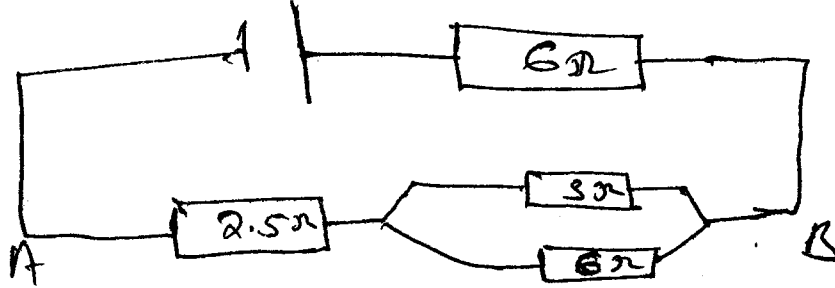
6. The figure below shows the readings on an electricity meter at the start and end of December.



i) How many kwh have been used during the month?

(2mks

7. Study the circuit diagram in the figure below and answer the questions that follow.



i) Calculate the effective resistance between A and B.

(3mks)

ii) Determine the current through the 3Ω resistor.

(4mks)

ii) The bill given to the consumer that month was 750 shillings. Calculate the cost per unit. (2mks)

8. State three uses of electromagnets

(3mks)

SECTION 'B'

9(i) What is a capacitor?

(2mks)

ii) State two factors that determine capacitance of a parallel plate capacitor.

(2mks)

iii) Three capacitors of capacitance 100mf 500mf and 400mf are connected together in a circuit. Draw a circuit diagram to show the arrangement of the capacitors if they are to give.

a) Effective capacitance of 250mf

(3mks)

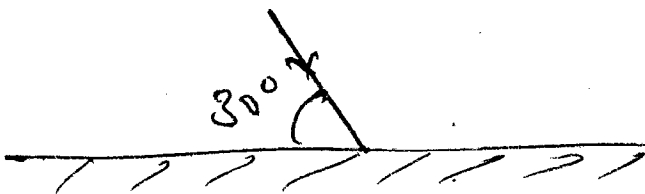
b) Maximum capacitance

(3mks)

10(i) Distinguish between lunar and solar eclipse.

(2mks)

ii) The figure below shows an incident ray at an angle of 30° to the mirror.



Find the angle of reflection if the mirror is rotated by an angle of 10° clockwise.

(3mks)

iii) An object is 10cm in front of a concave mirror of radius of curvature of 12cm.
a) Determine the position of the image. (3mks)

b) State the nature of image formed. (3mks)

11. Two liquids X and Y have densities 1.25 g/cm^3 and 1.0 g/cm^3 respectively. Calculate to two decimal places the density of a mixture 40% by mass of X the rest being Y. (3mks)

12. A bus of mass 3000kg travelling at a velocity of 20m/s collides with a stationary car of mass 600kg. The two then move together at a constant velocity for 3.0 seconds. Find
a) the impulse of the force (2mks)

b) the change in kinetic energy of the system.

13. A person pushing a wall is said to do no work. Explain

(2mks)

b) Name the transducer in the following

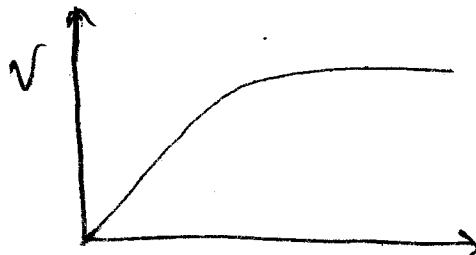
i) heat to kinetic energy.

(3mks)

ii) Sound to electrical energy

iii) chemical to electrical energy

14. The sketch below shows a velocity – time graph for a steel ball falling through a column of some viscoous fluid.



On the same axis, sketch the curve for the ball when moving through a less viscous fluid. (2mks)

15. In an experiment to estimate the diameter of an oil molecule, an oil drop of diameter 0.05 cm spread over a circular patch of diameter 20cm. Determine.

i) the volume of the drop. (3mk)

ii) the area of the patch (2mks)

iii) the diameter of the oil molecule (2mks)

iv) State any assumptions made

(1mk

v) State two possible sources of error in this experiment.

(2mks

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