

THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF EDUCATION AND CULTURE
FORM TWO SECONDARY EDUCATION EXAMINATION, 1992

0031

PHYSICS

TIME: 2 Hours.

1. This paper consists of sections A and B.
2. Answer ALL questions in both sections.
3. Answers for section A should be written in the spaces provided.
4. Answers for section B should be written on the answer papers provided and then tie them at the end of this paper.
5. Mathematical tables may be provided.

Acceleration due to gravity, $g = 9.8 \text{ m/s}^2$.

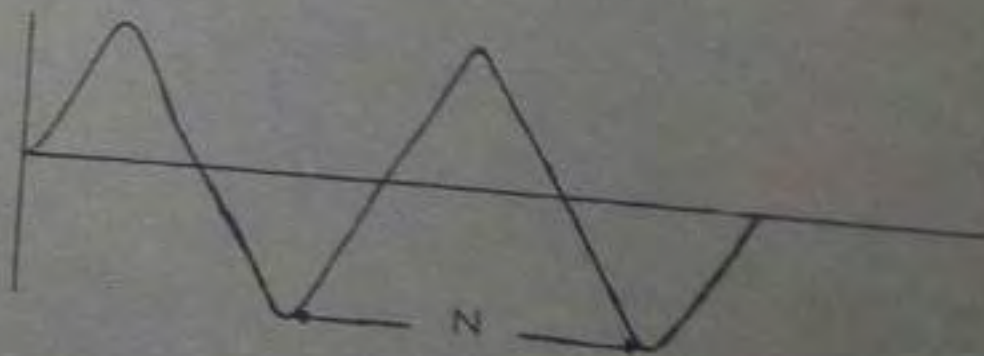
This paper consists of 6 printed pages.

SECTION A

Answer ALL questions in this section in the spaces provided.

1. (i) The three basic physical quantities are
A. time, velocity, speed C. length, time, mass ☐
B. density, mass, volume D. force, mass, acceleration.
- (ii) The inside diameter of a cylinder can be measured accurately by using a
A. metre rule C. vernier callipers ☐
B. micrometer screw gauge D. tape measure.
- (iii) An object which has a mass of 2kg was raised 3.5m above the ground. The work done on the body was
A. 7.0 J C. 7.0 Watt ☐
B. 70 J D. 70 Watt.
- (iv) A glass block of weight 254g when immersed completely in water was found to weigh 154g only. Therefore the relative density of the block was
A. 2.5 C. 0.6 ☐
B. 1.7 D. 0.4.
- (v) When a mercury barometer reads 76 cm, a water barometer will read approximately
A. 76m C. 7.5m ☐
B. 1.5m D. 10m.

2. (i)



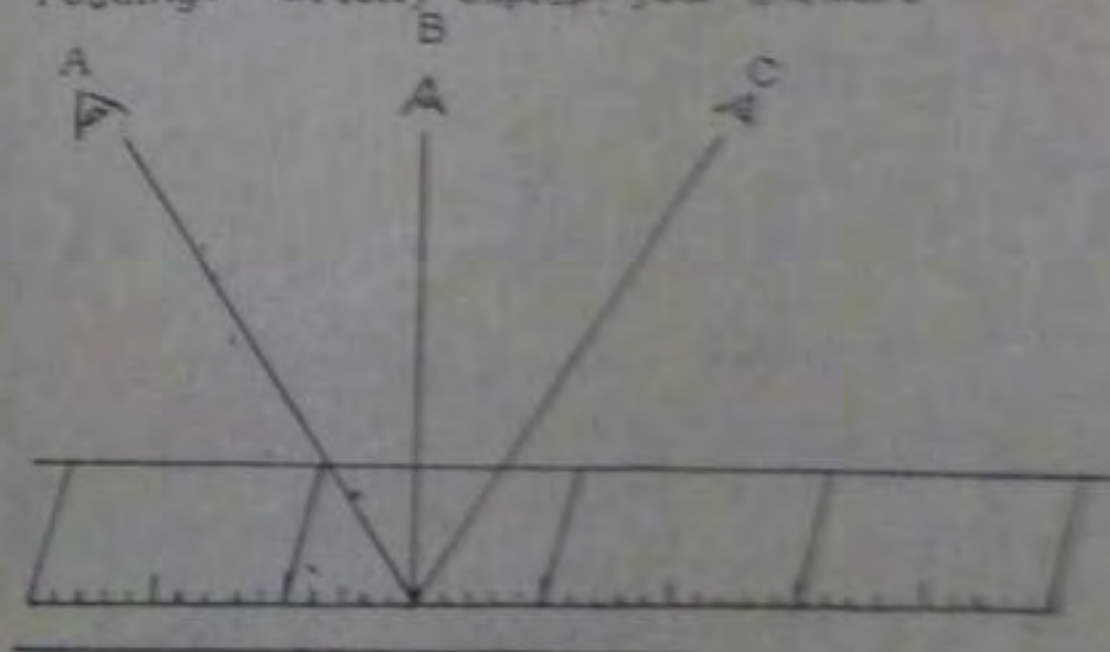
- The distance marked N in the above diagram which shows part of a wave is called _____.
- (ii) A device which is used to convert electrical energy into mechanical energy is called _____.

- (iii) A point whereby the total weight of an object appears to be acting is called _____
- (iv) If a simple machine has a velocity ratio of 5 and efficiency 80%, then its mechanical advantage is _____
- (v) The force of friction that occurs when a body just starts to slide is called _____
3. (i) Two cells each of e.m.f. 1.5 volts are connected in series.
 (a) Calculate the total e.m.f.

- (b) If a current of 0.5A flows in the circuit, what is the value of the resistor connected across the two cells.

(ii) State the two (2) laws of Reflection of Light.

- (iii) The diagram below shows how you can obtain the length of an object by using a ruler from three different positions. Which position of the eye will give you the most correct reading? Briefly explain your answer.



- (iv) Draw a labelled diagram of the magnetic field created by two N-poles placed close to each other.

- (v) What is the difference between
(a) A ray and a beam of light?

- (b) Umbra and penumbra?

4. (i) Find, by drawing or calculation, the resultant of two forces, 5.0N each, acting at a point at an angle of 90° with each other.

- (ii) Name the three particles of an atom and state their charges.

- (iii) Define the following terms:

(a) Latent heat

(b) Boiling point of a liquid

- (iv) A boy weighing 55kg finds that he can run up a flight of 15 steps, each 0.15m high, in 5.5s. What is his power?

- (v) Name the four (4) types of machines.

SECTION B

- (a) State the Principle of Flotation

- (b) A lump of brass weighs 0.45N in air, 0.39N in water and 0.41N in a certain oil.

Find the specific gravity of the oil.

(The density of water is 1000 kg/m^3).

6. (a) Define the "Principal focus of a convex mirror".

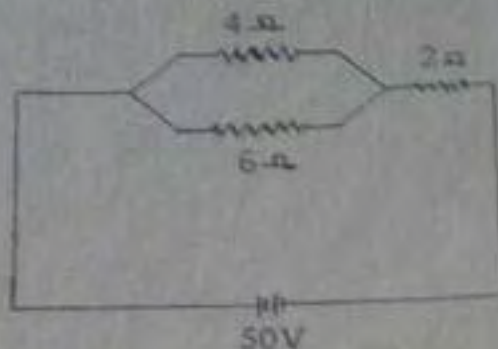
- (b) A concave mirror was used to form an image of an object pin. With the help of a diagram, show where the object pin must have been placed to obtain,

- (i) an upright, enlarged image
(ii) an inverted enlarged image.

C. the mass of an object
D. weight and mass are the same.

(NB: The diagrams must show at least two rays from a point on the object, not on the axis).

7.



Use the above diagram to find the following:

- (a) the effective single resistance of the parallel group
 - (b) the total resistance
 - (c) the current passing through the resistor 2Ω .
- 8.
- (a) Explain why one feels cold when one puts one's barefoot on the floor but feels warm when one puts it on a carpet.
 - (b) Mention two important applications of expansion.
 - (c) Calculate the heat given out when 6 kg of water cools from 70°C to 10°C .
(Specific heat capacity of water: 4200 J/kg K).
- 9.
- (a) State the laws of Electromagnetic Induction.
 - (b) A step-up transformer has 1500 turns in the primary coil and 4500 turns in the secondary coil. If a voltage of 250 volts is fed in the primary coil, what will be the voltage in the secondary coil?