**PHYSICS**

**FORM FOUR OPENER TERM ONE 2023**

**TIME: 1 HOUR 30 MINUTES**

**NAME………………………………………….CLASS………….ADM NO………………..**

***INSTRUCTIONS***

Write your name, class and Admission number in the spaces provided.

All working and answers must be written in the spaces provided below each question.

Answer ALLquestions

1. Name three types of motion (3marks)
2. Define the following terms (3marks)
3. Latent heat of fusion
4. Heat capacity
5. Evaporation
6. A body is made to change its velocity from 20m/s to 36m/s in four seconds. Find its acceleration (3marks)
7. a) What is capacitance (1mark)

b) State three factors affecting capacitance (3marks)

1. State three properties of stationary wave (3marks)
2. a) State the laws of re fraction (2marks)

 b) The refractive index of water is $\frac{4}{3}$ and that of a glass is$ \frac{3}{2}$ . Calculate the refractive index of glass with respect to water (3marks)

1. a) what is momentum (1mark)

 b) Differentiate between elastic and inelastic collisions (2marks)

1. Distinguish between emf and potential difference(2marks)
2. a) state the ohms law (1mark)

 b) State two conditions necessary for a conductor to obey ohms law(2marks)

1. Draw a diagram of two cells, a bulb and a switch connected in series (3marks)
2. State the assumptions made when deriving the equation of continuity (3marks)
3. Water flows through a pipe of 25mm at 20m/s. the pipe narrows down at some point and radius reduces to 10mm. what is the speed of water at this point. (3marks)
4. a) What is surface tension? (1mark)

 b) State two factors affecting surface tension (2marks)

 14. i) Define the following(4marks)

 a) Work done

 b) Mechanical advantage

1. Velocity ratio
2. Efficiency

 ii) Mucheru uses an inclined plane to lift a 50kg load through a height of 4.0m . the inclined plane makes an angle of 300 with the horizontal surface. If the efficiency of the plane is 72%, calculate:

1. the effort needed to move the load up the inclined plane at a constant velocity (4marks)
2. the work done against friction by raising the load through the height of 4m (4marks)
3. a) explain two factors affecting the rate of evaporation (4marks)
4. Dry steam is passed into a well lagged copper calorimeter of 0.3kgs containing 0.6kk of water and 0.04kgs office at o0c. the mixture is well stirred and the steam supply cut off when the temperature of the content reaches 270c. Assuming no heat loss, find the specific latent heat of evaporation of water if 25 grams of steam is found to have condensed water. Take specific heat capacity of copper as 400J/kg/k and latent heat of fusion of water as 3.36x 105J/kg (6marks)
5. a) state three ways of reducing friction (3marks)

 b) a minibus of 1200kgs travelling at a speed of 72km/h hits a stationary car of mass 800kgs. The impact takes two seconds before they move together at a common speed for 10 seconds. Calculate:

a) Common velocity (3marks)

b) Distance covered by the two vehicles after the collision (2marks)

c) Impulsive force (3marks)

1. a) state the Newton second law of motion (2marks)

 b) a body of mass70kgs is in a lift. If the acceleration of the lift is 2m/s2. Find:

 i) Resultant force as it was going upwards (3marks)

 ii) Resultant force as it was going downwards (3marks)