PRESIDENT'S OFFICE

REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT

GEITA ADVENTIST SECONDARY SCHOOL

FORM THREE HOLLIDAY PACKAGE 27TH APRIL 2020

PHYSICS

A block of metal of mass 300g at 100^{o}c is dropped into a lagged calorimeter of heat capacity 40J/^{o}c, containing 200g of water at 20^{o}c. The temperature of the mixture is 34^{o}c. determine: a) heat gained by calorimeter b) heat gained by water c) heat lost by the metal d) specific heat capacity of the metal block. (S.H.C of water = 4200J/kg^{o}c).

1. A brass cylinder of mass x was heated to 100^{o}c and then transferred into a thin aluminum can of negligible heat capacity containing 150 g paraffin at 11^{o}c. if the final steady temperature of paraffin and brass attained was 20^{o}c, determine the value of x.
2. A uniform 60 – centimeter rule AB is balanced horizontally across a knife edge placed 15cm from A. A mass of 30g is hung from the end A. What is the force exerted on the rule AB by the knife edge?
3. An iron cube of mass 480g and density 8g/cm^3 is suspended by a string so that it is half immersed in oil of density 0.9g/cm^3. Find the tension in the string.
4. A ball of mass 200g is dropped from a height of 2om. On impact with the ground it loses 30 Joules of energy. Calculate the height which it reaches on the ground. (g = 10N/kg).
5. An object weighs 8.0 N in air, 6.0N when totally immersed in water and 6.4 N when totally immersed in oil. Calculate: -

I. The relative density of oil.
II. The mass of water displaced.

6. By graphical method calculate the resultant force, if a force of 5N acts on a body Northwards and another force of 30N acts on the same body in the south eastern direction.

7. A block of wood of mass 20kg rests on a table. It is found that when a horizontal force of 8N pulls the mass, it just begins to slide on the table. Find the coefficient of static friction.

8. A Ship of mass 1200 tonnes floats in the sea water. What volume of sea – water does it displace? If the ship enters fresh water, what mass of cargo must be unloaded so that the same volume of water is displaced as before? (Density of fresh water = 100kg/m^3).

9. A 12t truck moving with a velocity of 2m/s hits a 2t car parked along the side of the road. If the velocity of the truck is reduced to 0.5m/s, determine the velocity of the car after impact(1t=1000kg)