SECOND
S2 PHYSICS HOLIDAY PACKAGE
TERM ONE 2020

Use where necessary

Acceleration due to gravity g……10ms^{-2}
Density of water……..1000kgm^{-3}

1. (a) Define length and state its SI unit? 2marks

(b) Convert the following as instructed: @ 2marks
(i) 16.4mm to metres
(ii) 20m to centimeters
(iii) 0.092km to metres
(iv) 250cm to metres

(c) Match the following @ 2marks

instrument	use
Micrometer srew gauge	Mass
Tape measure	Volume of water
Stopclock	Width of football pitch
Burrete	Diameter of a wire
Tripple beam	Time

2.(a) (i) Distinguish between mass and weight ? 4marks
(ii) Define the term centre of gravity of a body ? 2marks
(iii) Describe an experiment to determine the centre of gravity of a uniform lamina? 5marks
(b) (i)Define moment of force? 2marks
(ii)State the principle of moments? 2marks
(iii)A uniform and light metre rule is placed on a knife edge at the 40cm mark. Forces of 80N, FN and 30N are suspended at the 10cm mark, 60cm mark

and 80cm mark respectively. If the system is in equilibrium, find the value of F? 5marks

(c) State how the position of the centre of gravity of each of the bodies below changes when slightly tilted:

(i) A body in stable equilibrium? 2marks

(ii) A body in unstable equilibrium? 2marks

(iii) A body in neutral equilibrium? 2marks

3. (a) Distinguish between first glass and second class levers giving two examples of each? 4marks

(b) Define each of the following as applied to machines:

(i) mechanical advantage ? 2marks

(ii) velocity ratio? 2marks

(iii) velocity ratio? 2marks

(c) Draw a pulley system of velocity ratio three.? 3marks

(d) A machine of percentage efficiency 80 is used to move a load of 600N through a distance of 20m. If the effort moves through a distance of 100m, find the effort used.? 4marks

4. (a) Distinguish between umbra and penumbra as applied to light? 2marks

(b) Distinguish between a real image and a virtual image? 2marks

(c) (i) State four characteristics of the image formed by a plane mirror? 2marks

(ii) State two applications of plane mirrors? 2marks

(d) (i)State the laws of reflection of light? 2marks

(ii) Describe an experiment to verify that the angle of incidence is equal to the angle of reflection of light? 5marks

5. (a) Define volume and state the SI unit? 2marks

(b) Describe an experiment to determine the volume of an irregular object using displacement method? 6marks

(c) Find the volume of water in a cylinder of water radius 7cm if its height is 10cm? 3marks

(d) The volume of the cylinder was $120m^3$ .When a stone was lowered in the cylinder filled with water the volume increased to $15cm^3$. Find the height of the cylinder of radius 7cm? 4marks

6. (a) Differentiate between density and relative density? 3marks

(b) Describe an experiment to determine the Relative density of a liquid using a density bottle. ? 5marks

*(c)***.** A density bottle was used to measure the relative density Of a liquid and the following results were obtained.
Mass of empty bottle: =30g
Mass of bottle full of water: =130g
Mass of bottle full of liquid: =110g
Calculate the density of the liquid**?** 4marks

(d)A piece of aluminum weighs 80N in air and 50.37N when Completely immersed in water. Calculate the relative density Of aluminum? 3marks

7. (a) Define the following terms

i. Force? 2marks
ii. Vector quantity? 2marks
iii. Scalar quantity? 2marks

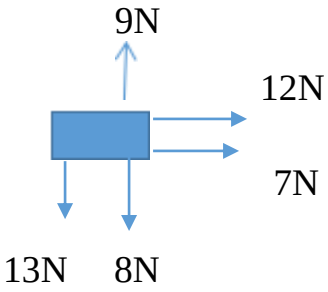
(b) Give four types of forces

(c) List two examples of

i. Vector quantities? 2marks

ii. Scalar quantities? 2marks

The figure below shows five forces acting on a 2.5kg mass.
Calculate the;



(i) resultant force on the mass ? 2marks
(ii) direction of the resultant force ? 2marks
(iii) acceleration of the mass? 1mark

8 . (a) what is meant by friction? 2marks

(b) outline two types of friction? 2marks

(c) describe an experiment for measurement of static friction ? 5marks
(d) Give 2 advantages and 2 disadvantages of friction? 4marks
(e) state 2 ways how to reduce friction between two surfaces? 2marks

9 .(a) Define matter ? 2marks
b) giving 2 examples in each outline the three states of matter? 6marks

c) state the kinetic theory of matter? 3marks

d) with the aid of a lebelled diagram show the different change of states of matter? 5marks

10.

a) Define surface tension and state its SI unit? 2marks
b) Describe Experiment to demonstrate existence of Surface tension? 6marks
c) Briefly explain the two factors affecting surface tension? 4marks
d) Give three effects of surface tension? 3marks

END