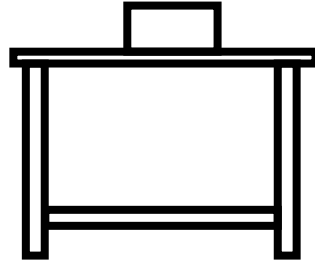


S2 PHYSICS HOLIDAY WORK

1. (a) i) Define the term friction
ii) state the types of friction.
iii) state the uses of friction,
b) i) state two ways of reducing friction,
(c) A block of wood of mass 25kg is resting on a horizontal table surface as shown below.



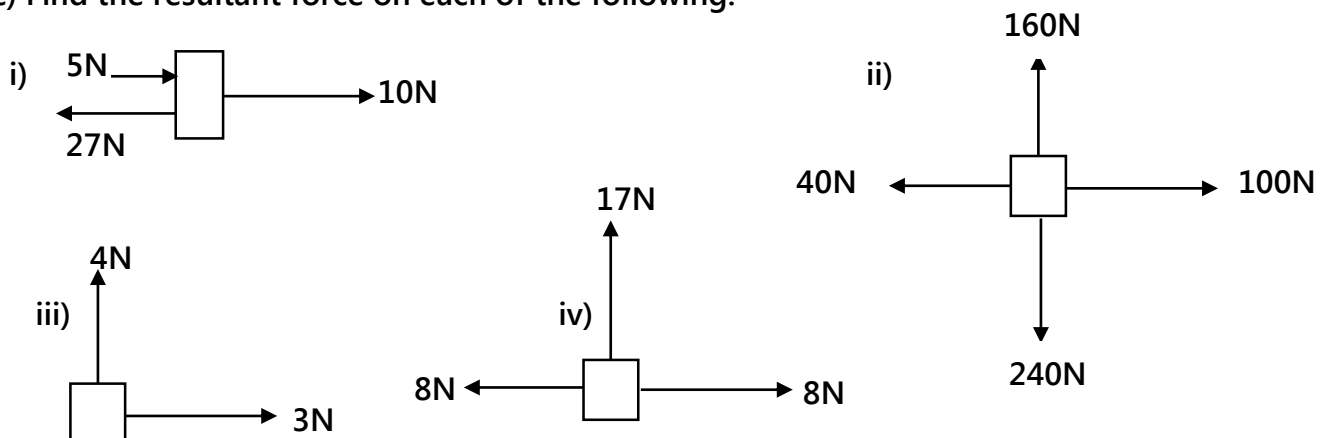
- i) show on the diagram the forces acting on the block.
ii) given that the co-efficient of friction between the table and the block is 0.82 find the frictional force between the table and the block.
2. (a) (i) define the term work.
(ii) state the S.I unit of work.
b). A machine raises a load of 1000N through a vertical height of 20m to the top of the building in 5 seconds. Find;
i) The work done against gravity by the machine.
ii) The power developed by the machine,
3. a) (i) Define the term weight
(ii) Find the weight of a man of mass 78kg on a certain planet where the acceleration due to gravity is $\frac{2}{3}$ that of the earth.
b) State any two differences between mass and weight.

Mass	Weight

4. (a) i) Define the term density of a substance.
ii) state the s.I unit of density.
b) Find the density of a substance of mass 42grams and volume 75cm^3 in;
i) gcm^{-3}
ii) kgm^{-3}
c) i) define the term relative density of a substance.
ii) petrol of mass 49g and density 0.7gcm^{-3} is mixed with 65g of kerosene and density 0.8gcm^{-3} .find the density of the mixture.

- iii) the relative density of a substance is 2.7, given that the density of water is 1000kgm^{-3} . Find the density of the substance.
- d) an empty density bottle has a mass of 50g, the same bottle has a mass of 80g when filled with water and 75g when full of a liquid.
- i) what is the relative density of the liquid?
- ii) find the density of the liquid.
- 5.a) Define the terms;
- i) scalar quantity
Give four examples of scalar quantities.
- ii) vector quantity.
Give four examples of vector quantities.
- b) define the terms
- i) cohesion
- ii) adhesion.
- 6 a) Define the terms;
- i) Diffusion
- ii) surface tension.
- b) i) state the factors that affect the rate of diffusion;
ii) state the factors that affect surface tension.
- c) i) in an experiment to approximate the size of the oil molecule oil of volume $6.0 \times 10^{-3} \text{ cm}^3$ was dropped on a clean water surface and formed an oil patch of diameter 1.5cm on the water surface. What is the size of the oil molecule?
ii) state any two assumptions made in the above experiment.
- 7(a) i) define the term force.
ii) state the S.I unit of force.
iii) Name any four types of forces.
iv) state the effects of force on an object.

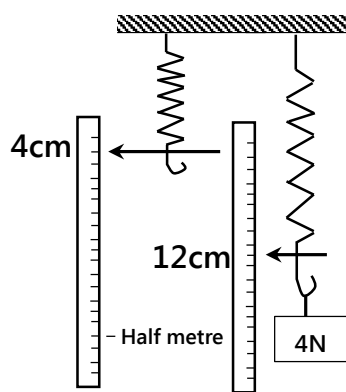
c) Find the resultant force on each of the following.



8. a) (i) what is a magnetic field?
 (ii) with the aid of a suitable diagram, show how a U- shaped piece of steel can be magnetised by electrical method.
- b) (i) Describe the different ways of magnetising a steel bar.
 (ii) Explain why the strength of a magnet cannot be increased beyond a certain limit,
- c) Describe briefly how one can test for the polarity of a magnet.
- d) sketch the magnetic field pattern a round a bar magnet with its south pole pointing north in the earth's magnetic field.

9.(a) state Hooke's law.

b)



The pointer on the spring is at the 4cm mark of a half metre rule when there is no load on the spring. When a load of 4N is hanged on the spring, the pointer goes to the 12cm mark.

- (i) What is the spring constant?
 (ii) Calculate the extension when a load of 4.5N is suspended on the spring.

