BCM SCHOOL, BASANT AVENUE, DUGRI ROAD, LDH

ASSIGNMENT

XI PHYSICS

CHAPTER – UNITS & MEASUREMENTS

TOPIC : DIMENSIONAL ANALYSIS

NUMERICALS

1. Find the value of force 100 dyne on a system based on a metre, kilogram and minute as fundamental units.
2. If the velocity be 20 cms^{-1}, the unit of acceleration be 40 cms^{-2} and the unit of force be 30 dyne, what are the units of mass, length and time?
3. Show that the following relations are dimensionally correct:

    (i) $F = \dfrac{2\,G\,M\,m}{(R+h)}$ (ii) $v = \sqrt{\dfrac{4\,G\,M}{R+h}}$

    Where G is Universal Gravitational constant, M is mass of the planet, m is mass of satellite, R is radius of the planet, F is the gravitational force and h is the height of the orbit of the satellite from the surface of the planet.
4. Given that the period T of oscillation of a gas bubble from an explosion under water depends on P, d and E, where P is the pressure, d is the density of water and E is the total energy of the explosion. Find dimensionally a relation for T.
5. In the relation $v = a + b\,t + c\,\sqrt{t}$, find the dimensions of a b/c where v is velocity and t is time.

   ### VERY SHORT ANSWER TYPE QUESTIONS:
6. Give an example of a constant which has no unit.
7. Give an example of a constant which has a unit.
8. Write two pairs of physical quantities having same dimensional formula.
9. Name the physical quantities having same dimensional formula as angular momentum.
10. Which of the following equations are dimensionally correct?

    (i)   Pressure = energy per unit volume   (ii)   Pressure = Energy per unit area

    (ii)   Pressure = Force per unit area   (iv)   Pressure = Momentum x volume x time