Exercise: Chapter 1

Answer ALL questions. (15 Marks)

1. Quantities that can be expressed in terms of basic quantities are called

   (a) derived quantities
   (b) physical quantities
   (c) base quantities
   (d) none of above

2. If gravitational force, F is given as $= G\frac{m_1 m_2}{r^2}$, where *m* is mass, *r* is radius and *G* is gravitational constant, what is the dimensional formula for *G*?

   (a) ML^2T^{-2}
   (b) $M^{-1}L^3T^{-2}$
   (c) $ML^{-1}T^{-1}$
   (d) None of the above

3. The displacement of a particle varies with time, *t* as $s = at^2 - bt^3$. The acceleration of the particle is zero at time is equal to:

   (a) a/b
   (b) a/3b
   (c) 3b/a
   (d) 2a/3b

4. The mass of planet X is 5.64×10^{26} kg and its radius is 6.00×10^{27} m. Find its density in gram per cubic centimeter.

   [6 Marks]

5. The volume of a substance represented in a function of time is calculated as $V = At^3 + B/t^3$, where time, *t* measures in seconds and volume, *V* is in cubic meters. Determine the dimensions constants and SI units of the constants *A* and *B*.

[6 Marks]

ANSWER:

1. B
2. B
3. C
4. 0.623 g/cm^3
5. m^{3}s