BCM SCHOOL, BASANT AVENUE, DUGRI

XI– PHYSICS

ASSIGNMENT

CHAPTER- UNITS & MEASUREMENTS

MULTIPLE CHOICE QUESTIONS

Units and Dimensions

1. Which of the following statements is correct about a scalar quantity:
   (i) it remain conserved in a process
   (ii) can never take negative sign
   (iii) does not vary from one place to another in space
   (iv) has same value for observers with different orientation of axis
   (a) (i) (b) (ii)
   (c) (iii) (d) (iv)

2. Which of the following is not the unit of time
   (a) Micro second (b) Leap year
   (c) Lunar month (d) Parallactic second

3. Temperature can be expressed as a derived quantity in terms of any of the following
   (a) length and mass (b) mass and time
   (c) length, mass and time (d) none of these

4. With the usual notations, the following equation
   $S_1 = u + \frac{1}{2}a(2t-1)$ is
   (a) only numerically correct
   (b) only dimensionally correct
   (c) both numerically and dimensionally correct
   (d) neither numerically nor dimensionally correct

5. Which of the following readings is the most accurate
   (i) 4000 m (ii) 40×10^2 m
   (iii) 4×10^3 m (iv) 0.4×10^4 m
   (a) (i) (b) (ii)
   (c) (iii) (d) (iv)

6. If unit of length and force are increased 4 times. The unit of energy:
   (a) is increased by 4 times
   (b) is increased by 16 times
   (c) is increased by 8 times
   (d) remain unchanged

7. Which one of the following is a set of dimensionless physical quantities :
   (a) strain, specific gravity, angle
   (b) strain, work, couple
   (c) work, angle, specific gravity
   (d) work, energy, frequency

8. Which one of the following does not have the same dimensions
   (a) work and energy
   (b) angle and strain
   (c) relative density and refractive index
   (d) plank constant and energy

9. The density of a material in CGS system is 8 g / cm^3. In a system of a unit in which unit of length is 5 cm and unit of mass is 20 g. The density of material is :
   (a) 8 (b) 20
   (c) 50 (d) 80

10. In a new system the unit of mass is α kg, unit of length is β m and unit of time is γ s. The value of 1 J in this new system is **[AMU B.Tech. 2012]**
   (a) $\gamma^2/\alpha\beta^2$ (b) $\gamma\alpha/\beta^2$
   (c) $\alpha\beta\gamma$ (d) $\alpha\gamma^2/\beta^2$

11. A boy recalls the relation almost correctly but forgets where to put the constant c (speed of light). He writes; $m = \frac{m_0}{\sqrt{1-v^2}}$, where m and m_0 stand for masses and v for speed. Right place of c is
   (a) $m = \frac{cm_0}{\sqrt{1-v^2}}$ (b) $m = \frac{m_0}{c\sqrt{1-v^2}}$
   (c) $m = \frac{m_0}{\sqrt{c^2-v^2}}$ (d) $m = \frac{m_0}{\sqrt{1-\frac{v^2}{c^2}}}$

12. The equation of state of some gases can be expressed as $\left(P + \frac{a}{V^2}\right)(V-b) = RT$. Here P is the pressure, V is the volume, T is the absolute temperature and a, b, R are constants. The dimensions of a are :
   (a) ML^5T^{-2} (b) $ML^{-1}T^2$
   (c) $M^0L^3T^0$ (d) $M^0L^6T^{-2}$