FREEDOM INTERNATIONAL SCHOOL

WORKSHEET- MCQ

L1 – UNITS AND MEASUREMENTS

PHYSICS

CLASS: XI **MAX MARKS:15**

TIME: 20 MINS.

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1. Identify the pair whose dimensions are equal. 1
   (a) torque and work (b) stress and energy
   (c) force and stress (d) force and work
2. Which of the following has the dimensions of pressure? 1
   (a) $[MLT^{-2}]$ (b) $[ML^{-1}T^{-2}]$
   (c) $[ML^{-2}T^{-2}]$ (d) $[M^{-1}L^{-1}T^{0}]$
3. In the relation, y = r sin(ωt + kx), the dimensional formula for kx or ωt is same as 1
   (a) r/ ω (b) r/y (c) ωt/r (d) yr/ ωt
4. The force F is given by the expression F= A cos (Bx)+C sin (Dt) where x is the displacement and t is the time. The dimensions of D/B are same as those of 1
   (a) velocity $[LT^{-1}]$
   (b) angular velocity $[T^{-1}]$
   (c) angular momentum $[ML^{2}T^{-1}]$,
   (d) velocity gradient $[T^{-1}]$
5. The velocity v of a particle at time t is given by $v = at + \frac{b}{t+c}$, where a, b and c are constants. The dimensions of a, b, and c are 1
   (a) [L], [LT] and $[LT^{-2}]$
   (b) $[LT^{-2}]$, [L] and [T]
   (c) $[L^{2}]$, [T] and $[LT^{-2}]$
   (d) $[LT^{-2}]$, [LT] and [L]
6. If the energy, $E = G^{p}h^{q}c^{r}$, where G is the universal gravitational constant, h is the Planck's constant and c is the velocity of light, then the values of p, q and r are, respectively 1
   (a) -1/2, 1/2 and 5/2
   (b) 1/2, -1/2 and -5/2
   (c)-1/2, 1/2 and 3/2
   (d) 1/2, -1/2 and -3/2
   (Planck's constant = Energy/frequency)
7. If force (F), velocity (V) and time (T) are taken as fundamental units, then the dimensions of mass are 1
   (a) $[FVT^{-2}]$ (b) $[FV^{-1}T^{-1}]$ (c) $[FV^{-1}T]$ (d) $[FVT^{-1}]$
8. If L = 2.331 cm, B = 2.1 cm, then L + B = ? 1
   (a) 4.431 cm (b) 4.43 cm (c) 4.4 cm (d) 4 cm
9. The respective number of significant figures for the numbers 23.023, 0.0003 and 2.1×10^{-3} are 1
   (a) 4, 4, 2 (b) 5, 1, 2 (c) 5, 1, 5 (d) 5, 5, 2
10. A cube has a side of length 1.2×10^{-2} m. Calculate its volume 1

(a) 1.7×10^{-6} m^3 (b) 1.73×10^{-6} m^3
(c) 1.0×10^{-6} m^3 (d) 1.732×10^{-6} m^3

11. If $x = at + bt^2$, where x is the distance travelled by the body in kilometres while t is the time in seconds, then the unit of b is 1
(a) Km/s (b) kms (c) km/s^2 (d) kms^2

For questions 12 to 15, two statements are given- one labelled Assertion (A) and other labelled Reason (R). Select the correct answer to these questions from the options as given below.

A. Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
B. Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
C. Assertion is true but Reason is false.
D. Both Assertion and Reason are false.

12. **Assertion:** The number of significant figures in 0.005 is one and that in 0.500 is three.
Reason: All the zero digits are significant. 1
13. **Assertion**: The dimensions for energy and volume are different.
Reason: Energy cannot be divided by volume. 1
14. **Assertion**: Mass, length and time are fundamental physical quantities.
Reason: They are independent of each other. 1
15. **Assertion**: A dimensionally wrong or inconsistent equation must be wrong.
Reason: A dimensionally consistent equation is an exact or a correct equation. 1