DPP
DAILY PRACTICE PROBLEMS

CLASS : XITH **SUBJECT : PHYSICS**
DATE : **DPP NO. : 9**

Topic :- UNITS AND MEASUREMENTS

1. Dimensional formula for the universal gravitational constant G is
   a) $[M^{-1}L^{2}T^{-2}]$ b) $[M^{0}L^{0}T^{0}]$ c) $[M^{-1}L^{3}T^{-2}]$ d) $[M^{-1}L^{3}T^{-1}]$

2. Number of base SI unit is
   a) 4 b) 7 c) 3 d) 5

3. Dimensional formula of capacitance (or farad) is
   a) $M^{-1}L^{-2}T^{4}A^{2}$ b) $ML^{2}T^{4}A^{-2}$ c) $MLT^{-4}A^{2}$ d) $M^{-1}L^{-2}T^{-4}A^{-2}$

4. The dimensional formula of angular velocity is
   a) $M^{0}L^{0}T^{-1}$ b) MLT^{-1} c) $M^{0}L^{0}T^{1}$ d) $ML^{0}T^{-2}$

5. If the length of rod A is (3.25 ± 0.01) cm and that of B is (4.19 ± 0.01) cm, then the rod B is longer than rod A by
   a) (0.94 ± 0.00) cm b) (0.94 ± 0.01) cm c) (0.94 ± 0.02) cm d) (0.94 ± 0.005) cm

6. Electric displacement is given by $D = \varepsilon E$,
   Here, $\varepsilon =$ electric permittivity
   $E =$ electric field strength
   The dimensions of electric displacement are
   a) $[ML^{-2}TA]$ b) $[L^{-2}T^{-1}A]$ c) $[L^{-2}TA]$ d) None of these

7. Unit of electric flux is
   a) Vm b) Nm/C^{-1} c) Vm^{-1} d) CNm^{-1}

8. Two full turns of the circular scale of a screw gauge cover a distance of 1 mm on its main scale. The total number of divisions on the circular scale is 50. Further, it is found that the screw gauge has a zero error of -0.03 mm. While measuring the diameter of a thin wire, a student notes the main scale reading of 3 mm and the number of circular scale divisions in line with the main scale as 35. The diameter of the wire is
   a) 3.32 mm b) 3.73 mm c) 3.67 mm d) 3.38 mm

9. Dimensions of coefficient of viscosity are
a) ML^2T^{-2} b) ML^2T^{-1} c) $ML^{-1}T^{-1}$ d) MLT

10. Out of the following which pair of quantities do not have same dimensions
a) Planck's constant and angular momentum b) Work and energy
c) Pressure and Young's modulus d) Torque and moment of inertia

11. The force F on the sphere of radius 'a' moving in a medium with velocity 'v' is given by $F = 6\pi\eta a v$. The dimensions of η are
a) $ML^{-1}T^{-1}$ b) MT^{-1} c) MLT^{-2} d) ML^{-3}

12. If $f = x^2$, then the relative error in f is
a) $\frac{2\Delta x}{x}$ b) $\frac{(\Delta x)^2}{x}$ c) $\frac{\Delta x}{x}$ d) $(\Delta x)^2$

13 . In the context of accuracy of measurement and significant figures in expressing results of experiment, which of the following is/are correct
(1) Out of the two measurements 50.14 cm and 0.00025 $ampere$, the first one has greater accuracy
(2) If one travels 478 km by rail and 397 m by road, the total distance travelled is 478 km
a)Only (1) is correct b) Only (2) is correct
c)Both are correct d) None of them is correct

14. Dimensions of kinetic energy are
a) ML^2T^{-2} b) M^2LT^{-1} c) ML^2T^{-1} d) ML^3T^{-1}

15. Given that $r = m^2 \sin pt$, where t represents time. If the unit of m is N, then the unit of r is
a) N b) N^2 c) N s d) N^2s

16. In an experiment the angles are required to be measured using an instrument. 29 divisions of the main scale exactly coincide with the 30 divisions of the vernier scale. If the smallest division of the main scale is half-a-degree ($= 0.5°$) then the least count of the instrument is
a) One minute b) Half minute c) One degree d) Half-degree

17. Dimensions of the following three quantities are the same
a) Work, energy, force b) Velocity, momentum, impulse
c) Potential energy, kinetic energy, momentum d) Pressure, stress, coefficient of elasticity

18. Dimension of electric current is
a) $[M^0L^0T^{-1}Q]$ b) $[ML^2T^{-1}Q]$ c) $[M^2LT^{-1}Q]$ d) $[M^2L^2T^{-1}Q]$

19. The period of oscillation of a simple pendulum is given by $T = 2\pi\sqrt{\frac{l}{g}}$ where l is about 100 cm and is known to have 1mm accuracy. The period is about 2s. The time of 100 oscillations is measured by a stop watch of least count 0.1 s . The percentage error in g is

a) 0.1% b) 1% c) 0.2% d) 0.8%

20. The percentage errors in the measurement of length and time period of a simple pendulum are 1% and 2% respectively. Then the maximum error in the measurement of acceleration due to gravity is

a) 8% b) 3% c) 4% d) 5%