INDUS RANGERS INSTITUTE PVT. LTD
UNIT AND MEASUREMENT

1.The dimensional formula for angular momentum is:

(a)ML^2T^{-2} (b)ML^2T^{-1}

(c)MLT^{-1} (d)$M^0L^2T^{-2}$

2.How many wave-length of Kr^{86} are there in one meter?

(a)1553164.13   (b)1650763.73

(c)2348123.73   (d)652189.631

3.The dimensional formula for G is

(a)ML^3T^{-2} (b)$M^{-1}L^3T^{-2}$

(c)$M^{-1}L^2T^{-3}$ (d)ML^2T^{-3}

4.If the velocity of light (c),the universal gravitational constant (G) and Planck's constant(h) be chosen as fundamental quantities ,the dimension of mass are

(a)$c^{1/2}G^{-1/2}h^{1/2}$ (b)$c^{-1/2}G^{1/2}h^{-1/2}$

(c)$c^{3/2}G^{-1/2}h^{-1/2}$ (d)$c^{1/2}G^{-3/2}h^{3/2}$

5.The period T of soap bubble under S.H.M is given by: T=$P^aD^bS^c$,where P is pressure ,D is density and S is surface tension. The values of a, b and c are

(a)-3/2,1/2,1   (b)-1,-2,3

(c)1/2,-3/2,-1/2   (d)1,2,1/3

6.The velocity of a freely falling body varies according to g^ph^q where g is the acceleration due to gravity and h is height from where it is released. The value of p and q are

(a)1/2,1/2   (b)1/2,1

(c)1,1/2   (d)1,1

7.The terminal velocity (v_t) of small sphere falling through a viscous medium depends on (i)mass of the sphere m ,(ii) radius of the sphere r,(iii)coefficient of viscosity of the medium η and (iv) acceleration due to gravity g. Which of the following relations is dimensionally correct?

(a)$v_t = \frac{kmg}{\eta r}$ (b)$v_t = \frac{kmgr}{\eta}$

(c)$v_t = \frac{kgm\eta}{r}$ (d)$v_t = \frac{k\eta r}{mg}$

8.The dimensional formula for Plank's constant h is

(a)ML^2T^{-2} (b)ML^2T

(c)$M^1L^2T^2$ (d)ML^2T^{-1}

9.The surface tension of a liquid is 70 dynes/cm. In M.K.S system it may be expressed as

(a)70N/m   (b)7×10^2N/m

(c)7×10^{-2}N/m   (d)7×10^3N/m

10. The most suitable unit for expressing nuclear radius is

(a)micron   (b)nanometer

(c)Fermi   (d)angstrom

11. The equation of state of some gases can be expressed as $\left(p + \frac{a}{v^2}\right)$(V-b)=RT, where the symbols have their usual meanings. The dimensions of 'a' are

(a)$ML^{-1}T^{-2}$ (b)ML^5T^{-2}

(c)L^6 (d)ML^6T^{-2}

12. If r and C denote resistance and capacitance ,the dimensions of RC are

(a)$M°L°T$

(b)$M°L°T°$

(c)$M°L°T°$

(d)not expressible in terms of M,L,T

13. If L and R denote inductance and resistance respectively, then the dimensions of L/R is:

(a)$M°L°T°$ (b)$M°L°T$

(c) $M^2L°T^2$ (d)MLT^2

14. Which of the following pairs of physical quantities have the same dimensions?

(a)work and power

(b)work and energy

(c)force and power (d)momentum and power

15. If L and C denote inductance and capacitance, the dimensions of LC are

(a)$M^°L^°T^°$ (b)MLT^{-2}

(c)$M^°L^2T^{-2}$ (d)$M^°L^°T^2$

16. The density of a cube is measured by measuring its mass and the length of its side. If the maximum errors in the measurement of mass and length 3% and 2% respectively ,the maximum error in the measurement of density is

(a)1% (b)5% (c)7% (d)9%

17. The dimensional formula for bulk modulus is

(a) $ML^{-2}T^2$ (b)$ML^{-3}T^{-2}$

(C)ML^2T^{-2} (d)$ML^{-1}T^{-2}$

18. While measuring acceleration due to gravity by a simple pendulum, a student makes a positive error of 1% in the length of the pendulum and a negative error of 3% in the value of time period. The percentage error in the measurement of g is:

(a)2% (b)4% (c)10% (d)7%

19. The dimensional formula of latent heat is :

(a)$M^°L^2T^{-2}$ (b)ML^2T^{-2}

(c)MLT^{-2} (d)ML^2T^{-1}

20. The measured mass and volume of a body are 22.42 g and $4.7cm^3$, respectively with possible error 0.01 g and 0.1 cm^3.The maximum error in density is about

(a)0.2% (b)2% (c)5% (d)10%

21. One second is defined to be equal to

(a)1650763.73 periods of Krypton clock

(b)652189.63 periods of Krypton clock

(c)1650763.73 periods of cesium clock

(d)9192631770 periods of cesium clock

22. Which of the following quantities has not been expressed in proper units?

(a)Young's modulus =N/m^2 (b)Surface tension =N/m

(c)Pressure=N/m^2 (d)energy=Kg m/s

23. One nanometer is equal to

(a)10^9mm (b)$10^{-6}cm$

(c) $10^{-7}cm$ (d)$10^{-9}cm$

24. The heat produced in a circuit depends upon resistance ,current and time. If the errors in measuring these quantities are 1%,2% and 1% respectively; the maximum error in measuring heat is

(a)1% (b)2% (c)3% (d)6%

25. The dimensional formula for potential difference is

(a)$ML^2T^{-3}I^{-1}$

(b)$M^2LT^{-3}I$

(c)$ML^2T^{-2}I^{-1}$ (d)$MLT^{-3}I^{-1}$

26. The dimensional formula for resistance is

(a)$ML^2T^{-3}I^{-1}$ (b)$ML^2T^{-2}I^{-2}$

(c)$ML^2T^{-3}I^{-2}$ (d)$MLT^{-3}I^{-2}$

27. The dimensional formula for capacitance is

(a)$M^{-1}L^{-2}I^{-2}$ (b)$ML^{-2}T^4I^{-2}$

(c)$ML^{-2}T^{-4}I^2$ (d)$M^{-1}L^2T^4I^2$

28. The dimensional formula for inductance is

(a)$ML^2T^{-2}I^{-1}$ (b)$ML^2T^{-2}I^{-3}$

(c)$ML^{-2}T^2I^{-2}$ (d)$M^2L^3T^{-3}I^{-2}$

29. The dimensional formula of Plank's constant are same as those of

(a)energy (b)power

(c)liner momentum (d)angular momentum

30. If E, m, L and G denote energy, mass, angular, momentum and gravitational constant ,respectively then EL²/m^5G^2 has the dimensions of

(a)length (b) mass (c)time (d)none of these