

QB365 Question Bank Software Study Materials

Nature of Physical World and Measurement 50 Important 1 Marks Questions With Answers (Book Back and Creative)

11th Standard

Physics

Total Marks : 50

Multiple Choice Question

50 x 1 = 50

- 1) One of the combinations from the fundamental physical constants is $\frac{hc}{G}$, The unit of this expression is
(a) **kg²** (b) m³ (c) S⁻¹ (d) m
- 2) If the error in the measurement of radius is 2%, then the error in the determination of volume of the sphere will be
(a) 8% (b) 2% (c) 4% (d) **6%**
- 3) If the length and time period of an oscillating pendulum have errors of 1% and 3% respectively then the error in measurement of acceleration due to gravity is
(a) 4% (b) 5% (c) 6% (d) **7%**
- 4) The length of a body is measured as 3.51 m, if the accuracy is 0.01 mm, then the percentage error in the measurement is
(a) 35.1% (b) 1% (c) **0.28%** (d) 0.035%
- 5) Which of the following has the highest number of significant figures?
(a) 0.007 m² (b) 2.64 × 10²⁴kg (c) 0.0006032 m² (d) **6.3200 J**
- 6) If $\pi = 3.14$, then the value of π^2 is
(a) 9.8596 (b) 9.860 (c) **9.86** (d) 9.9
- 7) Which of the following pairs of physical quantities have same dimension?
(a) force and power (b) **torque and energy** (c) torque and power (d) force and torque
- 8) The dimensional formula of Planck's constant h is
(a) **[ML²T⁻¹]** (b) [ML²T³] (c) [MLT⁻¹] (d) [ML³T⁻³]
- 9) The velocity of a particle v at an instant t is given by $v = at + br^2$. The dimensions of b is
(a) [L] (b) [LT⁻¹] (c) [LT⁻²] (d) **[LT⁻³]**
- 10) The dimensional formula for gravitational constant G is
(a) [ML³T⁻²] (b) **[M⁻¹L³T⁻²]** (c) [M⁻¹L⁻³T⁻²] (d) [ML⁻³T²]
- 11) The density of a material in CGS system of units is 4 g cm⁻³. In a system of units in which unit of length is 10 cm and unit of mass is 100 g, then the value of density of material will be
(a) 0.04 (b) 0.4 (c) **40** (d) 400
- 12) If the force is proportional to square of velocity, then the dimension of proportionality constant is
(a) [MLT⁰] (b) [MLT⁻¹] (c) [MLT⁻²T] (d) **[MLT⁻¹T⁰]**
- 13) The dimension of $(\mu_0\epsilon_0)^{\frac{1}{2}}$ is
(a) length (b) time (c) **velocity** (d) force

- 14) Planck's constant (h), speed of light in vacuum (c) and Newton's gravitational constant (G) are taken as three fundamental constants. Which of the following combinations of these has the dimension of length?
- (a) $\frac{\sqrt{hG}}{c^2}$ (b) $\frac{\sqrt{hG}}{c^2}$ (c) $\sqrt{\frac{hc}{G}}$ (d) $\sqrt{\frac{Gc}{h^2}}$
- 15) A length-scale (l) depends on the permittivity (ϵ) of a dielectric material, Boltzmann constant (k_B), the absolute temperature (T), the number per unit volume (n) of certain charged particles, and the charge (q) carried by each of the particles. Which of the following expression for l is dimensionally correct?
- (a) $l = \sqrt{\frac{nq^2}{\epsilon k_B T}}$ (b) $l = \sqrt{\frac{\epsilon k_B T}{nq^2}}$ (c) $l = \sqrt{\frac{q^2}{\epsilon n^{\frac{2}{3}} k_B T}}$ (d) $l = \sqrt{\frac{q^2}{\epsilon n k_B T}}$
- 16) Round of the following number 19.95 into three significant figures.
- (a) 19.9 (b) **20.0** (c) 20.1 (d) 19.5
- 17) Which is deals with the study of materials of an intermediate length scale?
- (a) **Macro physics** (b) Macroscopic physics (c) Microscopic physics (d) All the above
- 18) The acceleration of 20 m/s^2 in km/h^2 is _____.
- (a) **$2.59 \times 10^5 \text{ km/h}^2$** (b) $1.29 \times 10^5 \text{ km/h}^2$ (c) $2.0 \times 10^3 \text{ km/h}^2$ (d) $3.5 \times 10^5 \text{ km/h}^2$
- 19) If force $|F|$, velocity $|V|$ and time $|T|$ are taken as to fundamental units then the dimensions of mass are _____.
- (a) $FV^{-1}T$ (b) $FV^{-1}T$ (c) **FVT^{-1}** (d) FVT^{-2}
- 20) What is the SI unit of linear momentum?
- (a) ms^{-1} (b) ms^{-2} (c) **kg ms^{-1}** (d) $\text{kg m}^2 \text{ms}^{-1}$
- 21) What is the SI unit of Area?
- (a) m (b) **m^2** (c) Nm^{-1} (d) cm^{-1}
- 22) SI unit of the universal constant of gravitation (G) is _____.
- (a) $\text{kg}^{-2} \text{m}^{-2}$ (b) kg ms^{-1} (c) **$\text{Nm}^2 \text{kg}^{-2}$** (d) Nm^{-1}
- 23) The term used to mention study of macroscopic system to microscopic constituents is _____.
- (a) unification (b) macrocosm (c) **reductionism** (d) microcosm
- 24) Least count of metre scale _____.
- (a) **1 cm** (b) 0.1 cm (c) 1 mm (d) 0.1 mm
- 25) The density of a liquid in CGS system is 0.625 g/cm^3 . What is its magnitude in SI system?
- (a) **625 kg/m^3** (b) 0.0625 kg/m^3 (c) 0.625 kg/m^3 (d) 0.00625 kg/m^3
- 26) The unit of force is 1KN, the length is 1km and time 100s, what will be the unit of mass?
- (a) 1000 kg (b) 1 kg (c) 100 kg (d) **10,000 kg**
- 27) Random error can be eliminated by _____.
- (a) careful observation (b) eliminating the cause (c) **taking mean** (d) measuring with more than one instrument
- 28) Gross error can be eliminated by _____.
- (a) **careful observation and mental alert** (b) eliminating the cause (c) taking mean (d) measuring with more than one instrument
- 29) Which of the following digits are significant?

- (a) zero digits (b) zeros at the end without a decimal point
(c) all zeros between two non-zeros digits, irrespective of the decimal point (d) all the above
- 30) The density of a cube is measured by measuring its mass and length of its side. If the maximum error in the measurement of mass and length are 3% and 2% respectively, the maximum error in the measurement of density is _____.
 (a) 1% **(b) 9%** (c) 7% (d) 5%
- 31) The number of significant figures in 2.64×10^4 kg is _____.
 (a) 2 (b) 4 **(c) 3** (d) 5
- 32) The Van der Waal equation for n moles of a real gas is $(P + \frac{a}{V^2})(V - b) = RT$ where P is the pressure. V is the volume. T is the absolute temperature. R is the molar gas constant and 'a' and 'b' are Van der Waal constants. The dimensions of 'a' are the same as those of _____.
 (a) $\frac{P}{V}$ (b) PV **(c) PV²** (d) P²V
- 33) The dimensional formula of permeability of free space μ_0 is _____.
(a) [ML⁻²A⁻²] (b) [M⁰L¹T] (c) [M⁰L²T⁻¹A²] (d) none of these
- 34) According to Newton, the viscous force acting between liquid layers of area A and velocity gradient $\frac{\Delta v}{\Delta z}$ is given by $F = -\eta A \frac{\Delta v}{\Delta z}$, where η is constant called coefficient of viscosity. The dimensional formula of η is _____.
 (a) [ML⁻²T⁻²] (b) [M⁰L⁰T⁰] (c) [ML²T⁻²] **(d) [ML⁻¹T⁻¹]**
- 35) Two quantities A and B have different dimensions. Which of the following is physically meaningful?
 (a) A+B (b) A-B **(c) A/B** (d) None
- 36) Size of atomic nucleus is _____.
 (a) 10^{-10} m (b) 10^{-12} m **(c) 10^{-14} m** (d) 10^{-18} m
- 37) The techniques used to study the crystal structure of various rocks are _____.
(a) diffraction (b) interference (c) total internal reflection (d) refraction
- 38) The error caused due to the sheer carelessness of an observer is called as _____ error.
 (a) Systematise **(b) Gross** (c) Random (d) Personal
- 39) If ' a_m ' and ' Δa_m ' are true value and mean absolute error respectively, then the magnitude of the quantity may lie between _____.
 (a) $a_m + a_n$ to $a_m - a_n$ **(b) $a_m - \Delta a_m$ to $a_m + \Delta a_m$** (c) $2a_m$ to Δa_m (d) 0 to $2a_m$
- 40) The comparison of any physical quantity with its standard unit is known as _____.
 (a) fundamental quantities **(b) measurement** (c) dualism (d) derived quantities
- 41) The system of unit not only based on length, mass, and time is _____.
 (a) FPS (b) CGS (c) MKS **(d) SI**
- 42) The coherent system of units _____.
 (a) CGS **(b) SI** (c) FPS (d) MKS
- 43) The mean radius of a wire is 2 mm. Which of the following measurements is most accurate?
(a) 1.9 mm (b) 2.25 mm (c) 2.3 mm (d) 1.83 mm
- 44) The fractional error in the nth power of a quantity is _____.
(a) $\frac{\Delta Z}{Z} = n \frac{\Delta A}{A}$ (b) $\frac{Z}{\Delta Z} = n \frac{A}{\Delta A}$ (c) $\frac{\Delta Z}{Z} = \frac{1}{n} \frac{\Delta A}{A}$ (d) $\frac{Z}{\Delta Z} = \frac{1}{n} \frac{A}{\Delta A}$

- 45) Number of significant digits in 2030N_____.
- (a) 1 (b) 2 (c) 3 **(d) 4**
- 46) The Unit of magnetic induction is
- (a) Nm^{-1} (b) kg m A **(c) $\text{NA}^{-1} \text{m}^{-1}$** (d) Am^{-2}
- 47) What is the value of giga?
- (a) 10^{-9} **(b) 10^9** (c) 10^{-8} (d) 10^{-15}
- 48) The velocity of a particle is given by $V = b / t + ct^2 + dt^3$ the dimension of b is
- (a) $[\text{MLT}^{-1}]$ (b) $\text{M}^0\text{L}^0\text{T}$ (c) $[\text{ML}^0\text{T}^0]$ **(d) $[\text{M}^0\text{LT}^0]$**
- 49) The S.I unit of gravitational potential is
- (a) J **(b) J.Kg^{-1}** (c) J.Kg (d) J.Kg^2
- 50) Light year is used to measure distance between
- (a) two nucleus (b) two electrons (c) two atoms **(d) two stars**