

# Test ( class 11<sup>th</sup>)

## Physics classes by Nayan jha

Q.1 Density of liquid in CGS system is  $0.625 \text{ g cm}^{-3}$ . What is its magnitude in SI system?

- (a) 0.625                      (b) 0.0625                      (c) 0.00625                      (d) 625

Q.2 Given, force =  $A / (\text{density} + B^3)$ , What are the dimensions of A and B,?

- (a)  $[ML^2T^{-2}], [ML^{-1/3}]$  (b)  $[M^2L^4T^{-2}], [M^{1/3}L^{-1}]$  (c)  $[M^2L^4T^{-2}], [M^{1/3}L^{-1}]$  (d)  $[M^2L^{-2}T^{-2}], [ML^{-2}]$

Q.3 In the expression  $P = EI^2 m^{-5} G^{-2}$ , whose E, m, I and G denote energy, mass, angular momentum and gravitational constant respectively, the dimensions of physical quantity P are:

- (a)  $[MLT^0]$                       (b)  $[M^2LT^{-1}]$                       (c)  $[M^0L^{-0}T^0]$                       (d)  $[M^0ML^{-2}]$

Q.4 If the unit of force is 100 N, unit of length is 10, and unit of time is 100s, what is the unit of mass in this system of units? (a)  $10^5 \text{ kg}$                       (b)  $10^7 \text{ kg}$                       (c)  $10^2 \text{ kg}$                       (d)  $10^9 \text{ kg}$

Q.5 The displacement of a progressive wave is represented by  $y = A \sin(\omega t - kx)$ , where x is distance and t is time. Determine dimensional formula of (i)  $\omega$  and (ii) k

Q6. In a system of unit, if force (F), acceleration (A) and time (T) are taken as fundamental units then the dimensional formula for energy is :

- (a)  $[FA^2T]$                       (b)  $[FAT^2]$                       (c)  $[FA^2T]$                       (d)  $[FAT]$

Q7. The mass and volume of a body are found to be  $5.00 \pm 0.05 \text{ kg}$  and  $1.00 \pm 0.05 \text{ m}^3$  respectively. Then the maximum possible percentage error in its density is :

- (a) 6%                      (b) 3%                      (c) 10%                      (d) 5%                      (e) 7%

Q8. In an experiment four quantities a, b, c and d are measured with percentage error 1%, 2%, 3% and 4% respectively. Quantity P is calculated as follows,  $P = a^3 b^2 / cd$ ; Percentage error in P is ? (a) 10%                      (b) 7%                      (c) 4%                      (d) 14%

Q9. If force (F), velocity (V) and time (T) are taken as fundamental units, then the dimensions of mass are; (a)  $[FVT^{-1}]$                       (b)  $[FVT^{-2}]$                       (c)  $[FV^{-1}T^{-1}]$                       (d)  $[FV^{-1}T]$

Q10. which of the following sets of quantities have same dimensional formulae?

- (a) Frequency, angular frequency and angular momentum                      (b) surface tension, stress and spring constant (c) acceleration, momentum and retardation (d) Thermal capacity, specific heat and entropy (e) Work, energy and torque

Q11. If E= energy , G gravitational constant, I = impulse and M = mass, the dimension of  $GIM^2/E^2$  are same that of, (a) time                      (b) mass                      (c) length                      (d) force

Q12. The potential energy of a particle varies with distance  $x$  from a fixed origin as  $V = (A\sqrt{x} / (x+B))$  where  $A$  and  $B$  are constant, The dimensions of  $AB$  are:  
(a)  $[ML^{5/2}T^{-2}]$  (b)  $[ML^2T^{-2}]$  (c)  $[M^{3/2}L^{3/2}T^{-2}]$  (d)  $[ML^{7/2}T^{-2}]$

Q13. If force is proportional to square of velocity, then the dimensions of proportionality constant is: (a)  $[ML^{-1}T]$  (b)  $[ML^{-1}T^0]$  (c)  $[MLT^0]$  (d)  $[M^0LT^{-1}]$

Q14. The radius of a ball is  $5.2 \pm 0.2$  cm. The % error in the volume of the ball is ; (a) 11% (b) 4% (c) 7% (d) 9%

Q15. State and explain Parallax method.

Q16. State accuracy and precision

Q17. Write the limitations of Dimensions also states fundamental and derived units.

Q18. What do you mean by the term significant fig. write 4 rules to know about significant fig. Solve the following upto the correct significant fig.  $2.006 \times 0.012 / 1.20$ .

Q19. If two resistors of resistance  $R_1 = 10 \pm 0.1$  Ohm and  $R_2 = 20 \pm 0.2$  Ohm find the equivalent resistance connected in parallel.

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