PHYSICS

BOOKS - R G PUBLICATION

UNITS AND MEASUREMENTS

Exercise

---

1. Light year is a unit of

▶ **Watch Video Solution**

2. Find the relative error in x, if

$$x = a^4 b^{1/3} / cd^{3/2}$$

3. The dimension of impulse is

4. The resistance $R = \dfrac{V}{I}$, where $V = (100 +_5)$ volts and I $(10 +_{0.2})$ ampers.

Find the percentage error in R.

5. Find the relative error in x, if

$$x - a^4 b^{1/3} / cd^3 / 2$$

6. The temperatures of two bodies measured by a thermometer are

$t_1 = 40°C +_1 C$ and $t_2 = 80°C +_1^° C.$

Calculate the temperature difference and the error there in.

7. The distance covered by a particle in time t is given by $x = a + bt + ct^2 + dt^3$, find the dimensions of a,b,c and d.

8. write the limitations of dimesional analysis .

9. An expression of physical quantity is written as

$$\left(X = \sqrt{\frac{t}{m}}\right.$$ where T is the applied force and m is the mass per unit length. Find the dimensional representation of X and identify the physical quantity. $$\left.X = \sqrt{\frac{T}{m}}\right..$$

10. In van der Waals' equation $(P + (a)(V^2))$ `(V - b) = RT`, what are the dimesions of a and b? Here, P is pressure, V is volume, T is temperature and R is gas constant.

▶ Watch Video Solution

11. write the limitations of dimesional analysis .

▶ Watch Video Solution

12. An expression of physical quantity is written as

$\left(X = \sqrt{\dfrac{t}{m}} \right.$ where T is the applied force and

m is the mass per unit length. Find the dimensional representation of X and identify the physical quantity. $\left. X = \sqrt{\dfrac{T}{m}} \right.$.

▶ Watch Video Solution

13. Establish the relation $T = 2\pi\sqrt{1}/g$ for the time period of a simple pendulum with the

help of dimensional analysis.

Watch Video Solution

---

14. Light year is a unit of

Watch Video Solution

---

15. What is the unit for measuring nuclear cross section.

Watch Video Solution

16. What is the unit for measuring nuclear cross section.

17. Name two types of mass.

18. Write the singificant number of following.

1234

19. Write the singifcant number of following.

$$2.99 \times 10^{24} kg$$

20. Write the singifcant number of following.

$$.1590 gm/c,^{3}$$

21. Write three dimensional quantity.

▶ Watch Video Solution

22. which is the most accurate clock.

▶ Watch Video Solution

23. Write the dimension of rate of flow?

▶ Watch Video Solution

24. can a quantity have dimension , but no unit ?

> ▶ **Watch Video Solution**

25. What is the difference between 5.0 and 5.00

> ▶ **Watch Video Solution**

26. Write the dimension of following quantity

Kinetic energy

▶ **Watch Video Solution**

27. Write the dimension of following quantity

Planck's constant.

▶ **Watch Video Solution**

28. Write the dimension of following quantity

Electric field intensity

▶ **Watch Video Solution**

29. Write the dimension of following quantity

Angular velocity.

▶ **Watch Video Solution**

30. Is all constant dimensionless? Give support of your answer.

▶ **Watch Video Solution**

31. What do you mean by absolute error, relate error, and percentage error?

▶ **Watch Video Solution**

32. If $x = a + bt + ct^2$ where the unit fo x is meter and unit of t is sec. What is the unit of c.

▶ **Watch Video Solution**

33. Justify L + L = L and L - L = L.

▶ **Watch Video Solution**

34. write the limitations of dimesional analysis
.

35. Write the dimension of $\dfrac{1}{4\pi \in_0}$.

36. Check the following equation dimionisionaly correct or not.

$$S = ut + \dfrac{1}{2}at^2$$

37. Check the following equation dimionisionaly correct or not.

$$S_{nth} = u + \frac{a}{2}(2n - 1)$$

▶ Watch Video Solution

38. Check the following equation dimionisionaly correct or not.

$$\frac{1}{2}mv^2 = mgh$$

▶ Watch Video Solution

39. Check the following equation dimionisionaly correct or not.

$$n = \frac{1}{2l} = \sqrt{\frac{T}{m}}$$

The symbol has ussual meaning.

40. If $x = a + bt + ct^2$ where the unit fo x is meter and unit of t is sec. What is the unit of c.

41. Show that the relation $T = 2\pi\sqrt{\dfrac{l}{g}}$ for simple pendulum dimensionally correct

42. Let x and a stand for distance.

Is $\displaystyle\int \dfrac{dx}{\sqrt{a^2 - x^2}} = \dfrac{1}{A}\sin^{-1}\dfrac{a}{x}$ dimensionally correct.

43. Write the dimesnion of $a \times b$ in the relation $E = \dfrac{b - x^2}{ab}$ where E is the energy and x is the distance.

44. Write the dimension of $\dfrac{a}{b}$ from the following relation. $F = a\sqrt{x} + mbt^2$

45. State the number of significant figure in the following.

$.007m^2$

▶ **Watch Video Solution**

46. State the number of significant figure in the following.

$.0006032m^2$

▶ **Watch Video Solution**

47. State the number of significant figure in the following.

$6.320 J$

▶ **Watch Video Solution**

48. State the number of significant figure in the following.

$.23 gm$

▶ **Watch Video Solution**

49. The rotational K.E. is given by $\dfrac{1}{2}I\omega^2$. Use this equation to obtain dimension of I.

50. Name the physical quantity which has the same meaning as momentum.

51. In van der Waals' equation (P + (a)(V^2)` (V - b) = RT, what are the dimesions of a and b?

Here, P is pressure, V is volume, T is temperature and R is gas constant.