PHYSICS

BOOKS - SARAS PUBLICATION

PHYSICAL WORLD AND MEASUREMENT

Example

1. Dimensions of resistance in an electrical circuit, in terms of dimension of mass [M], of

length [L], of time [T) and of current [I], would be

A. $ML^2T^{-3}I^{-2}$

B. $ML^2T^{-3}I^{-1}$

C. ML^2T^{-2}

D. $ML^2T^{-1}I^{-1}$

Answer:

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2. If M (A,Z), M_p and M_n denote the masses of the nucleus $_Z^A X$ proton and neutron respectively in units of u $\left(lu = 931.5 MeV/c^2\right)$ and BE represents its bonding energy in MeV, then:

A.
$$M(A, Z) = ZM_p + (A - Z)M_n - BE/C^2$$

B. $M(A, Z) = ZM_p + (A - Z)M_n + BE$

C. $M(AZ) = ZM_p + (A - Z)M_n - BE$

D.

$$M(A, Z) = ZM_p + (A - Z)M_n + BE/C^2$$

Answer:

3. If the dimensions of a physical quantity are given by $M^a L^b T^c$, then the physical quantity will be:

A. Velocity if $a = 1, b = 0, c = -1$

B. Acceleration if $a = 1, b = 1, c = -2$

C. Force if $a = 0, b = -1, c = -2$

D. Pressure if $a = 1, b = -1, c = -2$

Answer:

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4. An exploision blows a rock into three parts .

Two parts go off at right angles to each other .

These two are ,1kg first part moving with a

velocity of $12ms^{-1}$ and 2kg second part

moving with a velocity of $8ms^{-1}$. If the third part files off with a velocity of $4ms^{-1}$. If the third part flies off with a velocity of $4ms^{-1}$, its mass would be:

    A. 7 kg

    B. 17 kg

    C. 3 kg

    D. 5 kg

Answer:

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5. The dimension of $\frac{1}{2}\varepsilon_0 E^2$, where ε_0 is permittivity of free space and E is electric field is :

A. ML^2T^{-2}

B. $ML^{-1}T^{-3}$

C. ML^2T^{-1}

D. MLT^{-1}

Answer:

6. An electric dipole of moment 'p' is placed an electric of intensity E. The dipole acquires a position, such that the axis of the dipole makes an angle `theta ' with the direction of the field.assuming that the potential energy of the dipole to be zero when 'theta ' =90 the torque and the potential energy of the dipole will respectively be

A. $pE\sin\theta,\ -2pE\cos\theta$

B. $pE\sin\theta,\ 2pE\cos\theta$

C. $pE\sin\theta,\ pE\cos\theta$

D. $pE\sin\theta, \; -pE\cos\theta$

Answer:

7. 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:$P = \dfrac{a^3 b^2}{cd}$, % error in P is

A. 0.14

B. 0.1

C. 0.07

D. 0.04

Answer:

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8. A uniform force of $\left(3\hat{i} + \hat{j}\right)$ newtons acts on

a particle of mass 2kg . Hence the particle is

displaced from position $\left(2\hat{i} + \hat{k}\right)$ meter to

position $\left(4\hat{i} + 3\hat{j} - \hat{k}\right)$ meter. The work done by the force on the particle is:

A. 9J

B. 6J

C. 13J

D. 15J

Answer:

9. The pair of quantities having is same dimensions is: -

A. Young's modulus'and Energy

B. Impulse and Surface Tension

C. Angular momentum and Work

D. Work and Torque

Answer:

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10. If force (F) , velocity (V) and time(T) are taken as fundamental units , then the dimensions of mass are:

A. $\left[FvT^{-1}\right]$

B. $\left[FvT^{-2}\right]$

C. $\left[Fv^{-1}T^{-1}\right]$

D. $\left.Fv^{-1}T\right]$

Answer:

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11. If energy (E), velocity (V) and time (T) are chosen as the fundamental quantities, the dimensional formula of surface tension will be:

A. $\left[Ev^{-1}T^{-2}\right]$

B. $\left[Ev^{-2}T^{-2}\right]$

C. $\left[E^2v^{-1}T^{-3}\right]$

D. $\left[Ev^{-2}T^{-1}\right]$

Answer:

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12. A disk and a sphere, of same radius but different masses roll off on two inclined planes of the same altitude and length. Which one of the two objects gets to the bottom of the plane first.

A. Depends on their masses

B. Disk

C. Sphere

D. both reach at the same time

Answer:

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