NEW STANDARD ACADEMY

Marks: 60

Date : 27-05-24 **CLASS : 11TH JEE** **Time: 3 HRS**

PHYSICS

1. A particle is constrained to move on a straight line path. It return to the starting point after 10 sec. The total distance covered by the particle during this time is 30m. Find speed & velocity both.

2. An Airplane moving horizontally with a speed of 180km/hr drops a food packet from height of 500m. Find the horizontal range of packet.
3. Show that there are two values of time for which a projectile is at the same height. Also show that sum of these two times is equal to the time of flight.
4. Two projectiles of same mass having their maximum kinetic energy in the ratio 4:1 and ratio of their maximum height is also 4:1, then what is ratio of their ranges?
5. A car travels the first half of a distance between two places at a speed of 30km/hr and the second half of the distance at 50 km/hr. The average speed of the car for the whole journey is
6. A train has a speed of 60km/h for the first one hour and 40km/h. for the next half hour. Its average speed in km/h is
7. A particle moves towards east with velocity 5m/s. After 10 seconds its direction changes towards north with same velocity.The average acceleration of the particle is
8. A force $\vec{F} = -K(y\hat{\imath} + x\hat{\jmath})$(Where K is appositive constant) acts on a particle moving in the x-y plane. Starting from the point (a,0) and then parallel to the y-axis to the point (a,a). The total work done by the forces $\vec{F}$ on the particle is
9. Write down the relation between H_{max} & Range.
10. What happens to the horizontal range of a projectile when its initial velocity is doubled, keeping the angle of projection same

CHEMISTRY

1. All the sodium atom in 0.23 mg of sodium vapours are to be converted in Na+(g). If IE of sodium is 495kJ/mol, The calculate the energy required. Atomic mass of sodium is 23.
2. When one million atom of I (g) are converted into I⁻(g), the energy liberated is 4.9×10^{-13} joules. Calculate the electron gain enthalpy in kJ per mol of atoms.
3. On moving down in which group , IE values show a reverse trend than normal?
4. Which element do you think would have been named by
   a) Lawrence Berkeley laboratory
   b) Seaborg's group
5. Element with electronic configuration $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^{10}\ 4s^2\ 4p^6\ 4d^{10}5s^2\ 5p^3$ belongs to which of the following group of the periodic table?
6. In lothar Meyer plot of atomic volume versus atomic mass, the peaks are occupied by
7. A new element discovered has been named Eka-Aluminium.Its atomic number and symbol respectively are
8. Ionisation potential and electron affinity of fluorine are 17.42 and 3.45eV respectively .calculate the electronegativity of fluorine on mulliken scale and Pauling scale .
9. Arrange the following oxides in order of increasing molecular (acidic) character: SO_3, Cl_2O_7, CaO and PbO_2
10. Electronegativity of F On pauling scale is 4.0. Calculate its value on Mulliken scale.

MATHS

1. If tan A= $\frac{1-cos}{sinB,}$,then prove that tan 2A=tan B.
2. $Cos^2\left(\frac{\pi}{4}-\beta\right)-sin^2\left(\alpha-\frac{\pi}{4}\right)=$
3. Prove that *sin x+sin 3x +sin 5x+sin7x = 4cos x cos 2x sin 4x*
4. Prove that *cot x cot 2x-cot 2xcot 3x –cot 3x cot x =1*
5. The value of$\left(sin\frac{2\pi}{7}\ sin\frac{4\pi}{7}+\right.$ $\left.sin\frac{4\pi}{7}sin\frac{8\pi}{7}+sin\frac{8\pi}{7}sin\frac{2\pi}{7}\right)\ equals$
6. The measure of the the angle subtended at the centre of a circle of radius 100 cm by an arc of length 22cm is
7. Prove that $\frac{Sinx-cosx+1}{sinx+cos\ -1}$ = secx +tanx.
8. If sinx + sin^2x +Sin^3x=1 then find the value of cos^6 x-4 cos^4x +8cos^2x.
9. *Prove that cos 4x =1- 8sin^2 xcos^2 x*
10. *Prove that* $\frac{\sin 2}{1-cos\ 2\theta}=cot\theta$