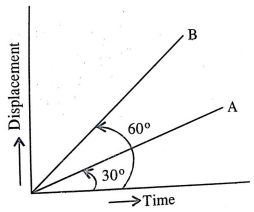
NEW STANDARD ACADEMY

Marks: 60

Date : 07-07-25 **CLASS : 11TH** **Time: 3 hours.**

PHYSICS

1. Explain that a body can have zero average velocity but not zero average speed.
2. Two straight line drawn on the displacement- time graph make angles 30^0 and 60^0 with time axis respectively as shown in figure. Which line represents greater velocity ? What is the ratio of two velocities?



3. An object is in uniform motion along a straight line. What will be the position – time graph for the motion of the motion of the object if (a)x_0= -ve,υ = +ve(b) x_0=+ve, υ = - ve(c) x_0= -ve, υ = +ve(d) both x_0 and υ are negative . The letters x_0 and υ represent the position of object at time t=0 and uniform velocity of the object respectively.
4. A car travelling at 9 m s^{-1} accelerates and attains a speed of 27 m s^{-1} in 5 s. Calculate the acceleration and distance covered.
5. A race car accelerates on a straight road from rest to a speed of 180 km h^{-1} in 25 s. Assuming uniform acceleration of the car throughout ,find ther distance covered in this time.
6. Draw the position time graph of (a) Positive acceleration (b) Negative acceleration (c) Zero acceleration.
7. If $\vec{A}+\vec{B} = \vec{B} + \vec{A}$ What is angle between vectors $\vec{A}$ and $\vec{B}$?
8. A person stands at 39.2 m from a house and throw a stone which just passes through a window 19.6 m above the ground. Calculate the velocity of projection of the stone.
9. Show that the projection angle θ_0 for a projectile launched from origin is given by
$$\theta_0 = tan^{-1}\left(\frac{4H}{R}\right)$$
Where H is the maximum height and R be the range of projectile.
10. 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?

CHEMISTRY

1. Which series of lines of hydrogen spectrum lie in the visible and UV region ?
2. What is the difference between electromagnetic wave theory and Planck quantum theory?
3. What is the ratio of the velocity of electron in the first, second and third orbit of He^+?
4. What is the ratio of the energy second orbit of H-atom, He and Li^{2+}?
5. In three moles of ethane (C_2H_6) Calculate the following:
   (a) Number of moles of carbon atoms.
   (b) Number of moles of hydrogen atoms.
   (c) Number of molecules of ethane.
6. State and explain
   (a) law of conservation of mass and energy
   (b) law of multiple proportions
7. Define Avogadro's law, Avogadro's number and mole taking suitable examples
8. What are empirical and molecular formulae? When is empirical and molecular formula same
9. Calculate the number of silver atoms in 1.08gram of silver.
10. (a) Calculate the number of molecules present in 17 gram Of $AgNO_3$.
    (b) What is the number of neutros in 1.6gram of CH_4?

BIOLOGY

1. Define the following terms :
   (a) Aestivation (b) Placentation
2. Define the following terms :
   (a) Actinomorphic (b) Zygomorphic

(c) Perigynous flower

3. Differentiate between
   (a) Racemose and cymose inflorescence
   (b) Fibrous root and adventitious root
4. Draw the labeled diagram of the following
   (i) Gram Seed
   (ii) V.S of maize seed
5. Describe vexillary aestivation .
6. Draw the lebel diagram -
   TS of dicot root
7. Draw the lebel diagram of-
   Dicot leaf
8. What is the difference in monocot and dicot root
9. What is stomata give its function a question
10. What is drup? Give the example

MATHS

1. Find the angle in radians between the hands of a clock at 7.20 p.m.
2. Express the following angle in radian measure.
   (i) -315° (ii) 570°
3. If x lies in the second quadrant ,then show that
   $\sqrt{\frac{1-\sin x}{1+\sin x}}+\sqrt{\frac{1+\sin x}{1-\sin x}}=12\sec x$
4. Find the values of the following:
   (i) $\tan 1395^0$ (ii) $\cos(-2070^0)$.
5. Find the other five trigonometric functions if $\cot x=\frac{3}{4}$ and x does not lie in the first quadrant.
6. Find the domain and the range of the functions 5-4 sin $3x$
7. Prove that : $\frac{\cos 4x+\cos 3x+\cos 2x}{\sin 4x+\sin 3x+\sin 2x}=\cot 3x$
8. Prove that $\tan\left(\frac{\pi}{4}+x\right)+\tan\left(\frac{\pi}{4}-x\right)=$ $2\sec 2x$.
9. Find the principal solution of the equations: $\sin x=\frac{1}{2}$
10. Solve (i) $(x-2)^2(x-4)^4\geq 0$
    (ii) $|x-2|>5$