

NEW STANDARD ACADEMY

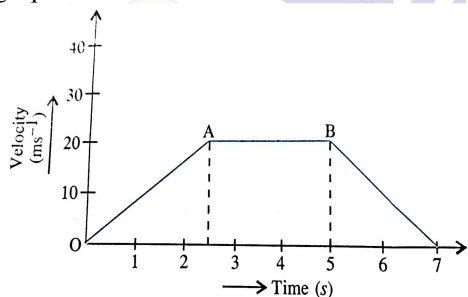
Date : 14-07-25

CLASS : 11TH

Marks: 60
Time: 3 hours.

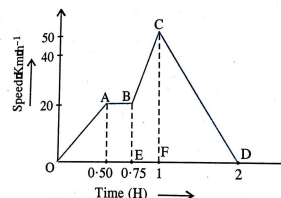
PHYSICS

- The displacement of a particle starting from rest ($t = 0$) is given by $x = 3t^2 - t^3$. Calculate the time at which acceleration of the particle becomes zero.
- A particle is moving along x - axis. The position of particle at any instant is given by $x = 10 + 0.2 t^2$ where x is measured in metre and time in second. Find (i) Average acceleration of the particle between $t = 2$ s and $t = 3$ s (ii) Show that acceleration of particle is constant.
- A car starts from rest and acquires a velocity of 54 km h^{-1} after 20 second. What will be acceleration of the car?
- A body moving with uniform acceleration covers 20 m in 2nd second and 30 m in 4th second of its motion. Calculate distance moved by it in 6th second.
- A body starts from rest and acquires a velocity of 12 m s^{-1} in 5s. Calculate the acceleration and distance covered by body.
- A body covers 12 m in 2nd second and 20m in 4th second. How much distance will be covered by it in 4th second after 5th second?
- A bus starts from rest with a constant acceleration of 5 m s^{-2} . At the same time a car travelling with a constant velocity of 50 ms^{-1} overtakes and passes the bus (i) Find at what distance will the bus overtake the car? How fast will the bus be travelling then?
- Discuss the nature of various types of distance - time graph.
- The velocity - time graph for a vehicle is as shown in figure. Draw the acceleration- time graph from it.



- A train moves from one station to another in two hours time. Its speed - time graph is as shown in figure. (i) Determine the maximum acceleration during the journey (ii) Calculate

the distance covered during the time interval from 0.75 hours to 1 hour.



CHEMISTRY

- Calculate the momentum of a particle whose wavelength is 2\AA .
Given that $h = 6.6 \times 10^{-34} \text{ kg m}^2 \text{ s}^{-1}$
- The mass of an electron is $9.1 \times 10^{-31} \text{ kg}$. Determine the product of uncertainty in position and velocity.
- (a) Write the value of l for $n = 4$, (b) values of m for $l = 3$, (c) maximum possible electron in 4th orbit, (d) maximum possible value of s for $n = 3$.
- The magnetic moment of a compound of Mn is 5.92 BM. What is the charge on metal cation in this compound?
- What do you understand by:
(a) representative elements,
(b) transition elements,
(c) inner transition elements,
- Explain the term successive ionization energies IE_2 is always greater than IE_1 , explain.
- Explain : (a) covalent radius (b) van der Waals' radius, (c) ionic radius (d) diagonal relationship
- Write the electronic configuration of elements $Z = 22, 16, 35, 54$
- How do the following properties change in a group and in a period with the increase in atomic number:
(a) Electronegativity
(b) Electron gain enthalpy
- Explain the following facts
(a) Inert gases have high ionization enthalpies.
(b) First ionization energy of nitrogen is higher than that of oxygen.

BIOLOGY

- Give the scientific name of Indian frog and give the external feature of frog.
- What is the function of fore limb and hind limb of frog?

3. Draw the label diagram of male reproductive system of frog.
4. Give the characteristic feature of solonaceae family with one example of floral formula
5. Give the name essential part of flower what is role of these part
6. Give the difference between vascular bundle of monocot root and dicot root
7. Draw the label diagram of TS of monocot stem.
8. Explain conjoint and radial vascular bundle
9. What is the hypogynous flower give the example
10. What is a tap root system give the example

MATHS

1. Express in radians the fourth angle of a quadrilateral which has three angle $46^{\circ}30'10''$, $75^{\circ}44'45''$ and $123^{\circ}9'35''$. Take $\pi = \frac{22}{7}$.
2. Find the radius of the circle in which a central angle of 60° intercepts an arc of 37.4 cm length. (use $\pi = \frac{22}{7}$)
3. If $\sin x = \frac{12}{13}$, find the quadrant in which x can lie. Also find the values of remaining trigonometric function of x.
4. If $\sec \alpha = x + \frac{1}{4x}$, prove that $\sec \alpha + \tan \alpha = 2x$ or $\frac{1}{2x}$.
5. Find the domain of the function $f(x) = \frac{1}{\sqrt{1 - \cos x}}$.
6. Evaluate the $\sqrt{2} \sin 135^{\circ} \cos 210^{\circ} \tan 240^{\circ} \cot 300^{\circ} \sec 330^{\circ}$
7. Show that $\cot\left(\frac{\pi}{4} + x\right) \cot\left(\frac{\pi}{4} - x\right) = 1$
8. Prove that $\sin x + \sin 3x + \sin 5x + \sin 7x = 4 \cos x \cos 2x \sin 4x$
9. Prove that
 - (i) $\frac{\sin 5x + \sin 3x}{\cos 5x + \cos 3x} = \tan 4x$
 - (ii) $\frac{\cos 7x + \cos 5x}{\sin 7x - \sin 5x} = \cot x$
10. Prove that
 - (i) $\frac{\sin 2x}{1 + \cos 2x} = \tan x$
 - (ii) $\frac{1 + \sin 2x - \cos 2x}{1 + \sin 2x + \cos 2x} = \tan x$