

# NEW STANDARD ACADEMY

Marks: 60

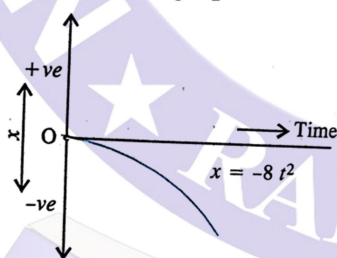
Date : 27-04-2026

CLASS : 11<sup>TH</sup>

Time: 3 hours

## PHYSICS

- The velocity of a particle is given by  $v = v_0 + gt + ft^2$ . If its position is  $x = 0$  at  $t = 0$  then what is displacement after  $t = 1$ s?
- Can a body have a constant speed and still have varying velocity?
- Under what conditions is the average velocity equal to instantaneous velocity?
- A car travelling at  $9 \text{ m s}^{-1}$  accelerates and attains a speed of  $27 \text{ m s}^{-1}$  in 5 s. Calculate the acceleration and distance covered.
- A particle having initial velocity  $5 \text{ m s}^{-1}$  moves with a constant acceleration  $2 \text{ m s}^{-2}$  for a time 10 second along a straight line. Find the displacement of particle in the last one second and the total distance travelled in 10 seconds.
- A body covers a distance of 4 m in 3rd second and 12 m in 5th second. If the motion is uniformly accelerated, how far will it travel in the next 3 seconds?
- The position-time graph of a particle moving along a straight line is shown in figure given below. Draw (i) velocity time (ii) acceleration time graph.



- Find the ratio of the distances travelled by a freely falling body in first, second and third second of its fall.
- A ball thrown vertically upward with a speed of  $19.6 \text{ m s}^{-1}$  from the top of a tower returns to the earth in 6 seconds. Find the height of tower.
- Two balls are thrown simultaneously, A vertically upward with a speed of  $20 \text{ m s}^{-1}$  from the ground, and B vertically

downward from a height of 40 m with the same speed along the same line of motion. At what points the two balls will collide? Take  $g = 9.8 \text{ ms}^{-2}$

## CHEMISTRY

- Write the properties of cathode rays
- Define atomic number (z) and mass number (A)
- Define isobar and give one example.
- Define frequency and wavelength
- A metal cation  $M^{2+}$  has 28 electrons. How many protons are there in its nucleus and what is the mass number of element? Number of neutrons in the metal atom = 35.
- The atomic number of two isobars A and B is 18 and 20 respectively. Nucleus of A contains 22 neutrons. How many neutrons are present in the nucleus of element B ?
- Give an isotope and isotone of  ${}_6C^{14}$
- Calculate the range of frequencies of visible light. The range of their wavelengths is  $3800\text{-}7600 \text{ \AA}$
- The wave number of an electromagnetic radiation is  $400 \text{ cm}^{-1}$  Calculate the frequency of radiation.
- $3 \times 10^{18}$  photons of a radiation produce 1.5 J of energy. What is the wavelength of radiation?

## BIOLOGY

- What is the general chemical formula for most carbohydrates?
- Name the bond that joins two monosaccharide units together.
- Which carbohydrate is known as "animal starch"?
- Why are glucose and fructose classified as reducing sugars?
- Name the two components that make up the structure of starch.
- Which specific polysaccharide is found in the cell walls of fungi?
- What are the monomeric units of sucrose?
- Which carbohydrate is the most abundant organic polymer on Earth?
- Give an example of a keto-pentose sugar.

10. In a polysaccharide chain, which end is considered the reducing end?

### MATHS

1. Write the following sets in the roster form:

(i)  $A = \{x : x \in \mathbb{R}, 3x + 5 = 14\}$

(ii)  $B = \{x \mid x^3 = x, x \in \mathbb{R}\}$

2. If  $A = \{x : x \text{ is a natural number}\}$ ,  $B = \{x : x \text{ is an even natural number}\}$ ,  $C = \{x : x \text{ is an odd natural number}\}$  and  $D = \{x : x \text{ is a prime number}\}$ , then find

(i)  $A \cap B$

(ii)  $A \cap C$

3. In a group of 65 people, 40 like cricket, 10 like both cricket and tennis. How many like tennis only and not cricket? How many like tennis?

4. A survey of 500 television viewers produced the following information; 285 watch football, 195 watch hockey, 115 watch basketball, 45 watch football and basketball, 70 watch football and hockey, 50 watch hockey and basketball, 50 do not watch any of the three games.

(i) How many viewers watch all the three games? (ii) How many viewers watch exactly one of the three games?

5. Draw the Venn diagram for the following:

(a)  $A - ((B \cup C) \cap A)$  (b)  $A' \cap B' \cap C$

(c)  $A - (B - C)$

6. In a group of 70 people, 37 like coffee, 52 like tea, and each person likes at least one of the two drinks. How many people like both coffee and tea?

7. Set A has m elements and Set B has n elements. If the total number of subsets of A is 112 more than the total number of subsets of B, then the value of  $m \times n$  is

8. Let A and B be two finite sets with m and n elements respectively. The total number of subsets of the set A is 56 more than the total number of subsets of B. Then the distance of the point P(m, n) from the point Q(-2, -3) is

9. Let  $A = \{1, 2, 4, 5\}$ ,  $B = \{2, 3, 5, 6\}$  and  $C = \{4, 5, 6, 7\}$ . Verify the following identities:

(i)  $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$

(ii)  $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$

10. Write the following sets in the set-builder form:

(i)  $\{2, 4, 8, 16, 32\}$

(ii)  $\{1, 4, 9, \dots, 100\}$