

NEW STANDARD ACADEMY

DPP -02

NEET - JEE
CLASS : 11TH

PHYSICS

1. The odometer of Raja's car reads 1700 km at the start of a trip and 2500 km at the end of the trip. The trip took 16h. What is the average speed of Raja's car in ms^{-1} ?
2. A drunkard walking in a narrow lane takes 5 steps forward and 3 steps backward, followed again 5 steps forward and 3 steps backward, and so on. Each step is 1 m long and requires 1 s. Determine how long the drunkard takes to fall in a pit 13 m away from the start.
3. A body travels with a velocity v_1 for time t_1 and with a velocity v_2 for time t_2 , find the average velocity of the body for the total time.
4. The displacement of a particle is given by at^2 . What is dependency of acceleration on time?
5. The velocity of a particle is given by equation $v = 4 + 2(C_1 + C_2 t)$ where C_1 and C_2 are constant. Find the initial velocity and acceleration of the particle.
6. The distance travelled by a body is proportional to the square of time. What type of motion this body has?
7. Explain clearly with examples, the distinction between (i) Magnitude of displacement (sometimes called distance) over an interval of time and the total length of the path covered by a particle over the same interval.
(ii) Magnitude of average velocity over an interval of time and the average speed over the same interval. (Average speed of a particle over an interval of time is defined as the total path length divided by the time interval). Show in both (a) and (b) that the second quantity is either greater than or equal to first. When is the equality sign true? (for simplicity, consider one dimensional motion only)
8. A man walks on a straight road from his home to a market 2.5 km away with a speed of 5 km/h. Finding the market closed, he instantly turns and walks back with a speed of 7.5 km/h. What is the (i) magnitude of average velocity and (ii) average speed of the man, over the interval of time (a) 0 to 30 min (b) 0 to 50 min (c) 0 to 40 min?
9. A body is moving in a straight line along x-axis. Its distance from the origin is given by the equation

$x = at^2 - bt^3$, where x is in meter and t is in second. Find. (i) The average speed of the body in the interval $t = 0$ and $t = 2s$ and
(ii) Its instantaneous speed at $t = 2s$.

10. Two trains A and B of length 400 m each are moving on two parallel tracks with a uniform speed of 72 km h^{-1} in the same direction with A ahead of B. The driver of B decided to overtake A and accelerates by 1 ms^{-2} . If after 50 s, the guard of B just brushes past the driver of A, what was the original distance between them?

CHEMISTRY

1. What is the orbital angular momentum for an electron in d orbital?
2. What type of metals are used in photoelectric cells? Give one example.
3. Can electrical discharge pass through air under one atmosphere pressure?
4. The atom of an element contains electrons. Its nucleus has 12 neutrons. What will be the atomic mass of the element?
5. What is the number of electrons in 1 mol N^{3-} ions?
6. An electron beam produces diffraction pattern on hitting nickel crystals. What does it prove?
7. Give the name and atomic number of the inert gas atom in which the total number of d-electrons is equal to the difference between the numbers of total p and total s electrons.
8. Calculate the wavelength of the spectral line in Lyman series corresponding to $n_2 = 3$.
9. Give two examples from everyday life where cathode ray tubes are used.
10. What is the main difference between wave emitted by a bulb or heater and that associated with a particle?

BIOLOGY

1. What is the meant by cell cycle?
2. What is the significance of meiosis 1st?
3. What is amphiatral mitosis?
4. what is a diplosome?
5. what is a amitosis?
6. what are higher nucleotides?
7. Name the monosaccharide found in nucleic acids?
8. What are peptide bond, explain with example.
9. Which organism stores carbohydrates as a glycogen.

10. what is alternative name of mRNA

MATHS

1. Let $A = \{1, 2, 3, 4\}$, $B = \{1, 4, 9, 16, 25\}$ and R be a relation defined from A to B as,

$$R = \{(x, y) : x \in A, y \in B \text{ and } y = x^2\}$$

(i) Depict this relation using arrow diagram.

(ii) Find domain of R .

(iii) Find range of R .

(iv) Write co-domain of R .

2. Define a relation R on the set N of natural numbers by $R = \{(x, y) : y = 2x - 1; x, y \in N, x \leq 5\}$.

Depict this relationship using roster form. Write down the domain and range.

3. Find the domain of the real function

$$f(x) = \sqrt{x^2 - 4}$$

4. Let $f(x) = \begin{cases} x^2, & \text{when } 0 \leq x \leq 2 \\ 2x, & \text{when } 2 \leq x \leq 5 \end{cases}$

$$g(x) = \begin{cases} x^2, & \text{when } 0 \leq x \leq 3 \\ 2x, & \text{when } 3 \leq x \leq 5 \end{cases}$$

Show that f is a function, while g is not a function.

5. Find the domain and range of $f(x) = |2x - 3| - 3$

6. Draw the graph of the Greatest Integer Function

7. Determine a quadratic function (f) is defined by

$$f(x) = ax^2 + bx + c. \text{ if}$$

$$f(0) = 6, f(2) = 1, f(-3) = 6.$$

8. Find the domain for which the followings:

$$f(x) = 2x^2 \text{ and } g(x) = 1 - 3x \text{ are equal.}$$

9. If $f(x) = x - \frac{1}{x}$, prove that

$$[f(x)]^3 = f(x)^3 + 3f\left(\frac{1}{x}\right)$$

10. If $[x]$ denotes the greatest integer function. Find the solution set of equation.

$$[x]^2 - 5[x] + 6 = 0$$