

# NEW STANDARD ACADEMY

DPP -01

NEET - JEE  
CLASS : 11<sup>TH</sup>

## PHYSICS

- The displacement time graph for two particles X and Y are straight lines making angles of  $30^\circ$  and  $60^\circ$  with the time axis. What is the ratio of the velocities of Y and X?
- Draw position time graph for a non uniform motion, when body starts from origin with increasing velocity.
- When a body accelerates by  $\beta t$ , what is the velocity after time  $t$ , when it starts from rest?
- If position of a particle at instant  $t$  is given by  $x = 2t^3$ , find the acceleration of the particle.
- Can a particle in one dimensional motion with zero speed have a non zero velocity?
- A train 110 m long is moving with a uniform velocity of 45 km/h. Find the time it will take to cross a bridge 1 km long.
- A man walks at a speed of 6 km/h for 1 km and 8 km/h for next 1 km. What is his average speed for a walk of 2 km?
- The displacement  $x$  in meters of a particle of mass  $m$  kg moving in one dimension under the action of a force, is related to the time  $t$  in seconds, given by the equation  $t = \sqrt{x} + 3$ . Find the displacement of the particle when its velocity is zero.
- Derive the relation  $u^2 - u_0^2 = 2as$ , where the letters have their usual meaning.
- The velocity of a body changes from  $u_0$  to  $u$  after covering a distance  $s$  with uniform acceleration  $a$ . Prove that:  
$$s = \frac{(u - u_0)(u + u_0)}{2a}$$

## CHEMISTRY

- Can we apply Heisenberg's uncertainty principle to a stationary electron? why or why not?
- Calculate the total number of angular nodes and radial nodes present in 3p orbital.
- Which of the following orbitals are degenerate?  
 $3d_{xy}$ ,  $4d_{xy}$ ,  $3d_{z^2}$ ,  $3d_{yz}$ ,  $4d_{z^2}$
- What is lowest value of  $n$  the allows  $g$  orbitals to exist?
- Which one  $Fe^{3+}$ ,  $Fe^{2+}$  is more paramagnetic and why?

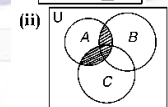
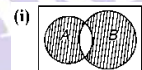
- Which isotope of hydrogen is called protium?
- Which particles determine the mass of an atom?
- State whether the following sets of quantum numbers can be allowed or not?  
 $n = 3, l = 2, m_l = -1, s = +1/2$
- What is the maximum number of orbitals in any energy level?
- Why do two electrons in an orbital have opposite spin?

## BIOLOGY

- Name the photosynthetic pigments that are present in the thylakoid membrane of chloroplast.
- Name a prokaryotic cell without cell wall.
- What are plasmodesmata?
- What holds the ribosome, together in a polysome?
- What are macro molecules? Give examples.
- Explain the composition of triglycerides.
- Draw the structure of the amino acid Alanine
- What are enzymes?
- Give the other name for meiosis?
- what is a diplosome?

## MATHS

- If  $A = \{1, 3, 5\}$ , how many elements has  $P(A)$ .  
or  
Find the number of elements in the power set of  $A = \{a, b, c\}$  [KVS-2016, Mumbai]
- Find the  $A \cap (B \cup C)$  if  $A = \{1, 3, 5, 8\}$ ;  
 $B = \{3, 5, 7\}$  and  $C = \{2, 4, 6, 8\}$ .
- What is represented by the shaded regions in each of the following Venn - diagrams.



- Let  $A = \{\text{All prime numbers less than 10}\}$  and  $B = \{\text{all odd number less than 10}\}$ . Find  $(A - (A \cap B))$ .
- Let  $A = \{1, 2, 4, 5\}$ ,  $B = \{2, 3, 5, 6\}$ ,  $C = \{4, 5, 6, 7\}$  verify the following identity

$$A \cup (B \cap C) = [(A \cup B) \cap (A \cap C)]$$

6. If  $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 24\}$

$A = \{x : x \text{ is prime and } x \leq 10\}$

$B = \{x : x \text{ is a factor of } 24\}$

Verify the following result

(i)  $A - B = A \cap B'$

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

(iii)  $(A \cap B)' = A' \cup B'$

7. Using properties of sets and their complements prove that:

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

(ii)  $A - (A \cap B) = A - B$

8. In a survey of 450 people, it was found that 110 play cricket, 160 play tennis and 70 play both cricket as well tennis. How many play neither cricket nor tennis?

9. Out of 25 members in a family, 12 like to take tea, 15 like to take coffee and 7 like to take coffee and tea both. How many like (i) at least one of the two drinks (ii) only tea but not coffee (iii) only coffee but not tea (iv) neither tea nor coffee.

10. In a survey it was found that 21 persons liked product  $A$ , 26 liked product  $B$ , and 29 liked product  $C$ . If 14 people liked products  $A$  and  $B$ , 12 people liked products  $C$  and  $A$ , 14 people liked products  $B$  and  $C$  and 8 liked all the three products. Find:

(a) the number of people who liked at least one product.

(b) the number of people who liked product  $C$  only.