NEW STANDARD ACADEMY

Semri Kothi Super Market, Raebareli
CLASS 11 (Academy) 05-05-2025

PHYSICS

1. The position of a particle moving along X-axis depends on time in accordance with the equation $x= at^2 + bt^3$,where x is in metre and t is in second. What are the units and dimensions of a and b? What do these represent?
2. Write the dimensions of a/b in the relation $F = a\sqrt{x} + bt^2$ where F is the force, x is the distance and t is time.
3. Calculate the following with regard to significant figures $\frac{1.53\times0.9995}{1.592}$
4. Write dimensions of $\frac{c}{a\times b}$ in relation $y = a\cos\omega t + bt - c\sqrt{t}$ where y is displacement, t is time andω is angular velocity.
5. In the relation, $P = \frac{a}{b}\exp\left(\frac{-a}{\theta}\right)$ P is pressure, Z is distance and θ is temperature. What is the dimensional formula of b?

CHEMISTRY

Balance the following equations :

1. $Mg_3N_2 + H_2O \rightarrow Mg(OH)_2 + NH_3$
2. $Al_4C_3 + H_2O \rightarrow Al(OH)_3 + CH_4$
3. $NaOH + Cl_2 \rightarrow NaCl + NaClO_3 + H_2O$
4. $KMnO_4 + H_2SO_4 + FeSO_4 \rightarrow K_2SO_4 + MnSO_4 + Fe_2(SO_4)_3 + H_2O$
5. $K_2Cr_2O_7 + H_2SO_4 + (COOH)_2 \rightarrow K_2SO_4 + Cr_2(SO_4)_3 + CO_2 + H_2O$

BIOLOGY

1. What is reduction division ?
2. Give the sub stages of meiosis prophase first.
3. What is crossover?
4. What is a chiasmata?
5. What is the synaptonemal complex?
6. Give the feature of diplotin?
7. Give the feature of anaphase first?
8. What is interkinesis?
9. Give the feature of pachytene sub stages of prophase first
10. Why meiosis is called reduction division?

MATH

1. Given the sets A (1.3.5). B (2, 4, 6) and C = [0, 2, 4, 6, 8). Which of the following may be considered as universal set (S) for all the three sets A, B and C?
   (i) {0,1,2,3,4,5,6} (ii) ϕ (iii) {0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10}
   (iv) {1, 2, 3, 4, 5, 6, 7, 8}
2. Find the union of each of the following pairs of sets.
   (i) A={a, e, i, o, u}, B = {a, b, c}
   (ii) A = {x: x is a natural number and multiple of 3}, B = {x: x is a natural number less than 6}
   (iii) A = {1, 2, 3}, B = ϕ
3. If A = {x:x is a natural number}, B = {x:x is an even natural number), C= (x: is an odd natural number) and D= {x:x is a prime number), then find
   (i) A∩B (ii) A∩C (iii) A∩D (iv) B∩C
   (v) B∩D (vi) C∩D
4. Let U= [1, 2, 3, 4, 5, 6, 7, 8, 9), A = {1,2,3,4), B = (2,4,6,8) and C-13,4,5,6). Find
   (i) A' (ii) B' (iii) (A∪C) ' (iv) (A∪ B)'
   (v) (A') ' (vi) (B-C) '
5. Given L = {1, 2, 3, 4), M= (3, 4, 5, 6) and N={1,3,5). Verify that L-(M∩N) = (L-M)∪(L-N)
6. Match each of the sets in Column I described in the roster form with the same set in the Column II described in the set-builder form:

Column I	Column II
(i) {P, R, I, N, C, A, L}	(a) $\{x : x$ is a +ve integer and is a divisor of 18$\}$
(ii) {0}	(b) $\{x : x$ is an integer and $x^2 - 9 = 0\}$
(iii) {1, 2, 3, 6, 9, 18}	(c) $\{x : x$ is an integer and $x + 1 = 1\}$
(iv) {3, –3}	(d) $\{x : x$ is a letter of the word PRINCIPAL$\}$

7. List all the elements of the following sets:
   (i) A={ x : x is an odd natural number}
   (ii) B={ x : x is an integer, $-1/2 < x < 9/2$ }
   (iii) C={ x / x is an integer, $x^2 \leq 4$ }
   (iv) D={ x : x is a letter in the word LOYAL)
   (v) E= {x : x is a month of a year not having 31 days}
   (vi) F={ x : x a consonant in the English alphabet which precedes k}

8. Find the pairs of equal sets, if any. Also, give reasons for your answer.
   $A = \{0\}$, $B = \{ x : x > 15 \text{ and } x < 5\}$, $C = \{x : x - 5 = 0\}$, $D = \{x : x^2 = 25\}$
   $E = \{ x : x \text{ is an integral positive root of the equation } x^2 - 2x - 15 = 0 \}$
9. If $A = \{1, 2, 3, 4\}$ $B = \{3, 4, 5, 6\}$ $C = \{5, 6, 7, 8\}$ and $D = \{7, 8, 9, 10\}$ then find
   (i) $A \cup B$ (ii) $A \cup C$ (iii) $B \cup C$ (iv) $B \cup D$
   (v) $A \cup B \cup D$
10. If $C = \{2, 4, 6, 8, 10, 12, 14, 16\}$ $D = \{5, 10, 15, 20\}$ then find
   (i) $C – D$ (ii) $D - C$