PAWAN WAGH ACADEMY

Class- 10th **First Term Examination** **Marks - 40**

Mathematics - 1

Time:

Q.1.A] Solve (Any Four) : (4)

1) $P = \{1,2,\ldots\ldots 10\}$, What type of set P is ?
2) Write using listing method " Set of human sensory organs "
3) $\sqrt[3]{18}$ write the order of given surds.
4) Find the value of $|15-2|$.
5) By using variables x and y form any two linear equations in two variables .
6) If $3x + 5y = 9$ and $5x + 3y = 7$ then what is the value of $x + y$?

Q.1.B] Solve(Any two) : (4)

1) Solve Simultaneous equations
$x + y = 4$; $2x - 5y = 1$
2) $9\sqrt{5} - 4\sqrt{5} + \sqrt{125}$
3) If $n(A) = 15$, $n(A \cup B) = 29$, $n(A \cap B) = 7$ then $n(B) = ?$

Q.2.A] Choose the correct alternative: (4)

1) What is the sum of the first 30 natural numbers ?
(a) 464 (b) 465 (c) 462 (d) 461
2) One of the roots of equation $x^2 + mx - 5 = 0$ is 2 ; find m
(a) -2 (b) - 1/2 (c) 1/2 (d) 2
3) To draw graph of $4x + 5y = 19$, find y when $x = 1$
(a) 4 (b) 3 (c) 2 (d) -3
4) To solve $x + y = 3$; $3x - 2y - 4 = 0$ by determinant method , find D.
(a) 5 (b) 1 (c) -5 (d) - 1

Q.2.B] Solve(Any two) : (4)

1) Find K if $x=3$ is a root of equation $Kx^2 - 10x + 3 = 0$
2) Find the 19^{th} term of the following A.P. 7, 13, 19,25.....
3) Solve the following quadratic equation by factorisation method.
$x^2 - 15x + 54 = 0$

Q.3.A] Complete any two of the following activities : (4)

1) First term and common difference of an A.P are 6 and 3 respectively, find S_{27}

Solution:

$a=6$, $d=3$, $S_{27} = ?$

$S_n = n/2\ [\square + (n-1)d\ ]$

$S_{27} = 27/2\ [12 + (27-1)\square\ ]$

$= 27/2 \times \square$

$= 27 \times 45$

$S_{27} = \square$

2) Determine nature of roots of the quadratic equation:

$x^2 + 2x - 9 = 0$

Solution:

Compare $x^2 + 2x - 9 = 0$ with $ax^2 + bx + c = 0$

$a = \square$, $b = 2$; $c = \square$

$b^2 - 4ac = 2^2 - 4 \times \square \times \square$

$D = 4 - \square$

$D = 40$

$b^2 - 4ac > 0$

The root of the equation are real and unequal.

3) One of the roots of equation $5m^2 + 2m + k = 0$ is $-7/5$.

Find the value of K

Solution:

$\square$ is a root of quadratic equation

$5m^2 + 2m + k = 0$

Put $m = \square$ in the equation

$5 \times \square^2 + 2 \times \square + k = 0$

$\square + \square + k = 0$

$\square + k = 0$

$k = \square$

Q.3.B] Solve(Any two) : (4)

1) Two numbers differ by 3. The sum of twice the smaller number and thrice the greater number is 19. Find the numbers.

2) Solve the following quadratic equations by completing the square method.

$m^2 - 5m = -3$

3) Find the value of discriminant.

$2y^2 - 5y + 10 = 0$

Q.4.] Solve(Any three) : (9)

1) In the natural numbers from 10 to 250, how many are divisible by 4 ?

2) The Sum of squares of two consecutive natural numbers is 244: find the numbers.

3) Solve using cramers rule.

$4x + 3y - 4 = 0$; $6x = 8 - 5y$

4) Given Arithmetic Progression 12, 16,20,24,.....Find the 24^{th} term of this Progression.

Q.5.] Solve(Any One) : **(4)**

1) A boat take 6 hours to travel 36 km downstream and 24 km upstream. It takes 9 hours to travel 48 km downstream and 40 km upstream.Find the speed of the stream and that of boat in still water.

2) The Sum of four consecutive terms of an A.P is 2. The Sum of the 3rd and 4th terms is 11. Find the terms.

Q.6.] Solve(Any One) : **(3)**

1) In a factory the ratio of salary of skilled and unskilled workers is 5:3 . Total salary of one day of both of them is Rs. 720. Find daily wages of skilled and unskilled workers.

2) α , β are roots of $y^2 - 2y - 7 = 0$ find,

1) $\alpha^2 + \beta^2$ 2) $\alpha^3 + \beta^3$