

**SCHOLARS ACADEMY****Class Tag Line****Std.: 10 (English)****WWW.SCHOLARSCLASSES.COM/BLOG****Time: 2 hrs****Date: 17-01-21****SUB : MATHEMATICS PART - I****Marks: 40****Q.1 A) Solve Multiple choice questions.****(4)**1) On comparing  $6x^2 + 11x - 35 = 0$  with  $ax^2 + bx + c = 0$ . We get a, b and c as :

a.  $a = 11, b = 6, c = 35$

b.  $a = 6, b = 11, c = 35$

c.  $a = 6, b = 11, c = -35$

d.  $a = 35, b = 11, c = -35$

2) If  $x = 3, y = k$  is a solution of the given  $3x - 4y + 7 = 0$ , then the value of k is

a. 16

b. -16

c. 4

d. -4

3) Determine nature of roots of the following quadratic equation :

$5x^2 - 4x - 3 = 0$

a. Real and equal

b. Real and unequal

c. Not real

d. None of these

4) If  $x + y = 5$  and  $x = 3$ , find the value of y.

a. 2

b. -2

c. 1

d. 3

**B) Solve the following questions.****(4)**1) Is the following a quadratic equation?  $x^2 + 5x - 2 = 0$ 

2) Find the values of the following determinants.

$$\begin{vmatrix} -3 & 8 \\ 6 & 0 \end{vmatrix}$$

3) Write the following equations in the form of  $ax^2 + bx + c = 0$  and find the value of a, b, c.

$x^2 + 5x = -(3 - x)$

4) Write an A.P. whose first term is a and common difference is d in each of the following.

$a = 10, d = 5$

**Q.2 A) Complete the following Activities. (Any Two)****(4)**

1) Determine the nature of roots of the following quadratic equations from their discriminant.

$x^2 - 4x + 4 = 0$

Comparing with  $ax^2 + bx + c = 0$  we get,

$a = 1, b = -4, c = 4$

$\Delta = \underline{\hspace{2cm}}$

$= \underline{\hspace{2cm}}^2 - 4 \times 1 \times 4$

$= 16 - 16$

$\therefore \Delta = \underline{\hspace{2cm}}$

As  $\Delta = \underline{\hspace{2cm}}$ , the roots of the quadratic equations are  $\underline{\hspace{2cm}}$ 

2) Complete the table to solve the following simultaneous equations.

$x - y = 4$

|        |                 |                 |                 |
|--------|-----------------|-----------------|-----------------|
| x      | <u>        </u> | - 1             | 0               |
| y      | 0               | <u>        </u> | - 4             |
| (x, y) | <u>        </u> | <u>        </u> | <u>        </u> |

3) If one root of the quadratic equation  $5m^2 + 2m + k = 0$  is  $\frac{-7}{5}$  then find the value of k by completing the following activity.

$\frac{-7}{5}$  is the root of equation  $5m^2 + 2m + k = 0$

$\therefore \frac{-7}{5}$  is satisfies the given equation.

Substituting  $m = \frac{-7}{5}$  in given equation.

$$\therefore 5 \times \underline{\hspace{2cm}} + 2 \times \underline{\hspace{2cm}} + k = 0$$

$$\therefore \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + k = 0$$

$$\therefore 7 + k = 0$$

$$\therefore k = \underline{\hspace{2cm}}$$

**B) Solve the following questions. (Any four)**

**(8)**

- 1) Find the value of  $D_x$  for the simultaneous equation  $3x + 4y = 8$ ;  $x - 2y = 5$ .
- 2) Write the next three terms of the A.P. whose first term is 11 and the common difference is 1.5.
- 3) Six faces of a die are as shown below.  

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| A | B | C | D | E | A |
|---|---|---|---|---|---|

If the die is rolled once, find the probability of -  
 (1) 'A' appears on upper face.    (2) 'D' appears on upper face.
- 4) Which of the following sequences are A.P.? If they are A.P. find the common difference.  
 $3, 3 + \sqrt{2}, 3 + 2\sqrt{2}, 3 + 3\sqrt{2}, \dots$
- 5) Solve the following quadratic equation by factorization method.  
 $3x^2 - 2\sqrt{6}x + 2 = 0$

**Q.3 A) Complete the following Activity (Any one)**

**(3)**

- 1) There is an auditorium with 35 rows of seats. There are 20 seats in the first row, 22 seats in the second row, 24 seats in the third row and so on. Find the numbers of seats in the twenty-second row.

The number of seats in consecutive rows increases by 2.

$\therefore 20, 22, 24 \dots$ , is an A.P.

$$\therefore d = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

There are 20 seats in the first row.  $\therefore a = 20$ .

We have to find the number of seats in the twenty-second row, i. e. we have fund  $t_{22}$ .

$$t_n = \underline{\hspace{2cm}}$$

... (Formula)

$$\therefore t_{22} = 20 + (22 - 1) \times 2$$

.. (Substituting the values)

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

$$\therefore t_{22} = \underline{\hspace{2cm}}.$$

The numbers of seats in the twenty-second row is  $\underline{\hspace{2cm}}$ .

- 2) In a game of chance, the spinning arrow rests at one of the numbers 1, 2, 3, 4, 5, 6,7 and 8. All these are equally likely outcomes.  
 Find the probabilities of the following events.
  - a. The arrow rests at an odd number.
  - b. It rests at a prime number.
  - c. It rests at a multiple of 2.

$$s = \{ \underline{\hspace{2cm}} \}$$

$$\therefore n(s) = 8$$

$$A = \{ \underline{\hspace{2cm}} \}$$

$$\therefore n(A) = 4$$

$$\therefore p(A) = \frac{n(A)}{n(S)} = \frac{4}{8} = \frac{1}{2}$$

$$B = \{ \quad \quad \quad \}$$

$$\therefore n(B) = 4$$

$$\therefore p(B) = \frac{n(B)}{n(S)} = \frac{4}{8} = \underline{\quad \quad \quad}$$

$$C = \{ \quad \quad \quad \}$$

$$\therefore n(C) = 4$$

$$P(C) = \frac{n(C)}{n(S)} = \frac{4}{8} = \underline{\quad \quad \quad}$$

**B) Solve the following questions. (Any two)****(6)**

- 1) Solve:  $5x^2 - 4x - 3 = 0$  by completing square method.
- 2) How many two digit numbers divisible by 4 ?
- 3) Solve the following quadratic equations by factorization method.  
 $2y^2 + 27y + 13 = 0$
- 4) In 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.

**Q.4 Solve the following questions. (Any two)****(8)**

- 1) Two dice are thrown find the probability of getting i) The sum of the numbers on their upper faces is divisible by 9. ii) The sum of the numbers on their upper faces is at the most 3. The number on the upper face of the first die is less than the number on the upper face of the second die.
- 2) Drawing pencils cost 80 paise each and coloured pencils cost Rs. 1.10 each. If altogether two dozen pencil cost Rs. 21.60 how many coloured pencils are there?
- 3) Find three consecutive terms in an A.P. whose sum is - 3 and the product of their cubes is 512.

**Q.5 Solve the following questions. (Any one)****(3)**

- 1) A missing helicopter is reported to have crashed somewhere in the rectangular region with dimension  $9 \times 4.5$  km. There was a lake of deminsion  $3 \times 2.5$  km in one of the corner of the rectangular region.
  1. Draw the figure to represent the above information.
  2. Find the probability that the helicopter crashed inside the lake.
- 2) Iraa wants to buy a car. She want to select a car depends on usage of petrol by it. Car A travels  $x$  km for every litre of petrol, while car B travels  $(x + 5)$  km for every litre of petrol. Help her to choose perfect car for her by finding litres of petrol used by car A and car B in covering a distance of 400km. If car A uses 4 litres of petrol more than car B in covering 400 km, write down an equation, in  $x$  and solve it to determine the number of litres of petrol by car B for the journey.