

# Nayak's Tutorials

Year : 2025 - 26  
Std : X SSC

Sample Paper 1  
Algebra

Marks : 40  
Duration : 2 hr

## Q.1 A) Solve Multiple choice questions.

(4)

- 1) When a registered dealer sells goods to another registered dealer under GST, then this trading is termed as .....  
a. BB      b. B2B      c. BC      d. B2C
- 2) The point which satisfies the following simultaneous equations is?  
 $5m - 3n = 8$  ;  $3m + n = 2$   
a. (1, 2)      b. (2, 1)      c. (- 1, 1)      d. (1, - 1)
- 3) Which of the following is not a quadratic equation.  
a.  $2x^2 = 3x - 5$   
b.  $(2x - 1)(x - 1) = 2x^2 - 7x + 2$   
c.  $(2x - 1)(x + 2) = (x - 1)(x + 1)$   
d.  $(x + 1)^3 = x^3 + 2x + 2$
- 4) Find the probability of getting a tail when one coin is tossed.  
a.  $\frac{2}{1}$       b.  $\frac{3}{2}$       c.  $\frac{1}{3}$       d.  $\frac{1}{2}$

## B) Solve the following questions.

(4)

- 1) If you want to purchase 50 shares of MV Rs. 50 each. What is the total amount to be paid?
- 2) Find the values of following determinants.  
$$\begin{vmatrix} 5 & 3 \\ -7 & 0 \end{vmatrix}$$
- 3) Write an A.P. whose first term is a and common difference is d in each of the following. a = 6, d = - 3
- 4) Two roots of quadratic equations are given ; frame the equation.  
10 and -10

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

(4)

- 1) If  $3x + 5y = 6$  and  $5x + 3y = 26$ , find (x-y).

$$3x + 5y = 6 \quad \dots (1)$$

$$5x + 3y = 26 \quad \dots (2)$$

\_\_\_\_\_ equation (1) form equation (2).

$$5x + 3y = 26 \quad \dots (2)$$

$$3x + 5y = 06 \quad \dots (1)$$

$$\underline{\quad - \quad - \quad - \quad}$$

$$2x - 2y = 20$$

$$\underline{\quad \quad \quad} = 10$$

$\therefore$

... (Dividing both the side by \_\_\_\_\_)

- 2) The maximum bowling speed (km/h) of 33 players at a cricket coaching centre is given in the following table. Find the modal bowling speed of a player.

| Bowling speed (km/h) | Number of players frequency (c.f) |
|----------------------|-----------------------------------|
| 85 - 100             | 9                                 |
| 100 - 115            | 11                                |
| 115 - 130            | 8                                 |
| 130 - 145            | 5                                 |

Here,  $L = 100$ ,  $f_m = 11$ ,  $f_1 = 9$ ,  $f_2 = 8$ ,  $h = 15$ .

Mode = \_\_\_\_\_ ... (Formula)  
 ... (Substituting the values)

$$= 100 + \left| \frac{11 - 9}{2(11) - 9 - 8} \right| \times 15$$

$$= 100 + \underline{\hspace{2cm}} \times 15$$

$$= 100 + \underline{\hspace{2cm}}$$

$$= 100 + 6 = \underline{\hspace{2cm}}$$

The modal bowling speed of a player is \_\_\_\_\_ km/h.

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

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

$$\therefore S_n = \frac{n}{2} [ \underline{\hspace{2cm}} + (n - 1)d ]$$

$$\therefore S_{27} = \frac{27}{2} [ 12 + (27 - 1) \underline{\hspace{2cm}} ]$$

$$= \frac{27}{2} \times \underline{\hspace{2cm}}$$

$$= 27 \times 45$$

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

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

**(8)**

- 1) A dividend of 6% was declared on a share of FV Rs. 100 at a certain price. If the rate of return is 8%, calculate MV of the share. How many shares would a person get on investing Rs. 7500?
- 2) Find the values of the following determinants.

$$\begin{vmatrix} 3\sqrt{6} & -4\sqrt{2} \\ 5\sqrt{3} & 2 \end{vmatrix}$$

- 3) Which of the following sequences are A.P ? If it is an A.P, find next two terms. -  $\frac{3}{2}, \frac{1}{2}, \frac{-1}{2}, \dots$

- 4) Form the quadratic equation from its roots.

$$1 - 3\sqrt{5} \text{ and } 1 + 3\sqrt{5}$$

- 5) A box contains 5 strawberry chocolates, 6 coffee chocolates and 2 peppermint chocolates. Find the probability of each of the following events, if one of the chocolates is picked from the box at random.

(i) it is a coffee chocolate.              (ii) it is a peppermint chocolate.

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

**(3)**

- 1) If the face value of the share is Rs. 100 and market value is Rs. 150. Let the rate of brokerage be 0.5%. What amount should one pay for purchasing 100 such shares? What amount should one receive after selling 100 such shares?

I) At the time of buying shares:

$$\begin{aligned}\text{Buying price of 1 share} &= \text{MV} + \text{Brokerage} \\ &= 150 + 0.5\% \text{ of } 150 \\ &= 150 + 0.75 \\ &= \underline{\hspace{2cm}}\end{aligned}$$

If someone purchases 100 such shares the total cost is  $100 \times 150.75 = \text{Rs. } 15075$ .

Here \_\_\_\_\_ is the share price and \_\_\_\_\_ is the brokerage paid.

II) At the time of selling shares.

$$\begin{aligned}\text{Selling price per share} &= \underline{\hspace{2cm}} \\ &= 150 - 5\% \text{ of } 150 = 150 - 0.75 \\ &= \underline{\hspace{2cm}}.\end{aligned}$$

If someone sells 100 such shares, he will get,

$$100 \times 150 - \text{Rs. } 75 = \underline{\hspace{2cm}} \text{ after selling 100 such shares.}$$

- 2) Solve :  $3x + 2y = 29$ ;  $5x - y = 18$

$$3x + 2y = 29 \quad \dots \text{ I}$$

$$\text{and } 5x - y = 18 \quad \dots \text{ II}$$

Multiplying equation (II) by 2.

$$\therefore 5x \times 2 - y \times 2 = \underline{\hspace{2cm}} \times 2$$

$$\therefore 10x - 2y = \underline{\hspace{2cm}} \quad \dots \text{ III}$$

Let's add equation (I) and (III)

$$3x + 2y = 29$$

$$10x - 2y = 36$$

$$\begin{array}{r} 13x = 65 \\ \hline x = 5 \end{array}$$

Substituting  $x = 5$  in equation (I)

$$3x + 2y = 29$$

$$\therefore 3 \times 5 + 2y = \underline{\hspace{2cm}}$$

$$\therefore 15 + 2y = 29$$

$$\therefore 2y = 29 - 15$$

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

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

$(x, y) = \underline{\hspace{2cm}}$  is the solution.

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

**(6)**

- 1) Solve the following quadratic equations by factorisation.  
 $25m^2 = 9$
- 2) Solve the following simultaneous equations using Cramer's method.  
 $x + 2y = -1$  ;  $2x - 3y = 12$
- 3) The faces of a die bear numbers 0, 1, 2, 3, 4, 5. If the die is rolled twice, then find the probability that the product of digits on the upper face is zero.
- 4) In an A.P. 19th term is 52 and 38th term is 128, find sum of first 56 terms.

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

**(8)**

- 1) A card is drawn at random from well-shuffled pack of 52 playing cards. Find the probability that the card drawn is
  - a. i. King                                      ii. A face card                                      iii. A red card.
  - b. i. Jack of hearts                                      ii. A diamond                                      iii. Not a diamond.
- 2) Show the following data by a frequency polygon.

|                        |         |           |           |           |            |
|------------------------|---------|-----------|-----------|-----------|------------|
| Electricity bill (Rs.) | 0 - 200 | 200 - 400 | 400 - 600 | 600 - 800 | 800 - 1000 |
| Families               | 240     | 300       | 450       | 350       | 160        |

- 3) Two taps A and B can together fill a swimming pool in 15 days. A and B are kept open for 12 days and then B is closed. It takes another 8 days for the pool to be filled. How many days does each tap require to fill the pool?

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

**(3)**

- 1) If  $\alpha$  and  $\beta$  are the roots of  $x^2 + 5x - 1 = 0$  then find -

i)  $\alpha^3 + \beta^3$                       ii)  $\alpha^2 + \beta^2$

- 2) The loans sanctioned by a bank for construction of farm ponds are shown in the following table. Find the mean of the loans.

|                        |       |       |       |       |       |
|------------------------|-------|-------|-------|-------|-------|
| Loan (Thousand Rupees) | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 |
| No. of farm ponds      | 13    | 20    | 24    | 36    | 7     |