



P.V.G.'s
Muktangan English School & Jr. College,
44, Vidyanagari, Parvati, Pune - 411009.
Terminal Examination (2025-26)
Standard - X

Subject : Mathematics - I

Marks - 40

Date : 13.10.2025

Time : 8.00 am to 10.00 am

Q1. A) Four alternative answers for each of the following subquestions are given. Choose the proper alternative answer & write its alphabet. (4)

- i) What is the degree of the determinant $\begin{vmatrix} 5 & 3 \\ 2 & 4 \end{vmatrix} = ?$
A) 3 B) 14 C) 2 D) -14
- ii) What is the sum of first 30 natural numbers?
A) 464 B) 465 C) 462 D) 461
- iii) The roots of $x^2 + kx + k = 0$ are real and equal. Then $k =$ _____.
A) 2 B) 0 C) 4 D) 0 or 4
- iv) GST system was introduced in our country from _____.
A) 31st March 2017 B) 1st January 2017
C) 1st April 2017 D) 1st July 2017

B) Solve the following subquestions. (4)

- i) Decide whether $x^2 + \frac{1}{x} = 5$ is a quadratic equation or not. Justify.
- ii) If the rate of SGST on an article is 9%, what is the rate of GST on it?
- iii) Find the first term of an A.P., where $t_n = 3n - 4$.
- iv) Find the solution of the following simultaneous equation.

$$x - y = 2 = x + y$$

Q2. A) Complete any two of the following activity.**(4)**

- i) First term and common difference of an A.P. are 6 and 3 respectively. Complete the following activity to find S_{27} .

Solution : $a = 6, d = 3, n = \boxed{}$

$$S_n = \frac{n}{2} [\boxed{} + (n-1)d] \text{ -----(formula)}$$
$$S_{27} = \frac{27}{2} + [\boxed{} + (27-1) \times 3]$$

On solving, we get

$$S_{27} = \boxed{}$$

- ii) Complete the following table to draw the graph of $2x - 6y = 3$

x	-5	
y		0
(x, y)		

- iii) One of the roots of equation $5m^2 + 2m + k = 0$ is $-\frac{7}{5}$. Complete the following activity to find the value of 'k'.

Solution : $-\frac{7}{5}$ is a root of quadratic equation $5m^2 + 2m + k = 0$

$\therefore$ It satisfy the equation.

$\therefore$ Substituting $m = \boxed{}$ in the given equation; we get

$$\therefore 5\left(-\frac{7}{5}\right)^2 + 2 \times \boxed{} + k = 0$$

$$\therefore \boxed{} + \boxed{} + k = 0$$

$$\therefore k = \boxed{} \text{ ----- (after solving)}$$

B) Solve any four of the following questions.**(8)**

- i) Find the value of discriminant for the following equation : $2y^2 - y + 2 = 0$
- ii) Decide whether the following sequence is an A.P. or not. If yes, then find the common difference?

$$\frac{1}{5}, \frac{3}{5}, \frac{5}{5}, \frac{7}{5}, \dots$$

- iii) The taxable value of a belt is Rs. 586. Rate of GST is 18%, then what is the price of the belt for the customer ?
- iv) Obtain a quadratic equation whose roots are 3 & -7.
- v) Two numbers differ by 3. The sum of the greater number and twice the smaller number is 15. Find the smaller number.

Q3. A) Complete any one of the following activity. (3)

- i) The co-ordinates of the point of intersection of the lines $ax + by = 9$ and $bx + ay = 5$ are (3, -1). Find the values of 'a' and 'b'.

Solution : $ax + by = 9$ ----- (1)

$bx + ay = 5$ ----- (2)

The co-ordinates of the point of intersection are (3, -1).

Substitute $x = \boxed{}$ and $y = \boxed{}$ in equation (1) and (2)

$\boxed{} - b = 9$ ----- (3)

$3b - a = 5$ ----- (4)

multiply equation (3) by 3.

$\boxed{} - 3b = 27$ ----- (5)

Adding equation (4) and (5) ; we get

$$\begin{array}{rcl} -3b + 9a & = & 27 \\ + & & \\ 3b - a & = & 5 \end{array}$$

$$8a = 32 \quad \therefore a = \boxed{}$$

Substituting the value of 'a' in equation (4)

We get $b = \boxed{}$ ----- (after solving)

The values of 'a' and 'b' are $\boxed{}$ & $\boxed{}$ respectively.

- ii) Shri Aditya Sanghavi invested ₹ 50,118 in shares of FV ₹ 100, when the market value is ₹ 50. Rate of brokerage is 0.2% and rate of GST on brokerage is 18%, then how many shares were purchased?

Solution : FV = ₹ 100 MV = ₹ 50

$$\text{Discount} = \text{FV} - \text{MV} = ₹ \boxed{}$$

$$\text{Investment} = ₹ 50,118$$

$$\text{Brokerage} = 0.2\%$$

$$\text{GST} = 18\%$$

$$0.2\% \text{ Brokerage per share} = 50 \times \frac{0.2}{100} = ₹ \boxed{}$$

$$\begin{aligned} 18\% \text{ GST on brokerage per share} &= 0.10 \times \frac{18}{100} \\ &= ₹ \boxed{} \end{aligned}$$

$$\begin{aligned} \text{Purchase cost of 1 share} &= \text{MV} + \text{Brokerage} + \text{GST} \\ &= \boxed{} + 0.10 + \boxed{} \\ &= ₹ 50.118 \end{aligned}$$

$$\begin{aligned} \text{Number of shares} &= \frac{\text{Total Purchase Value}}{\text{Cost of 1 Share}} \\ &= \frac{50,118}{50.118} = \boxed{} \text{ shares} \end{aligned}$$

∴ $\boxed{}$ shares were purchased.

B) Solve any two of the following questions. (6)

- The sum of two roots of a quadratic equation is 5 and sum of their cubes is 35, find the equation.
- Measures of angles of a triangle are in A.P. The measures of smallest angle is 5 times of common difference. Find the measures of all angles of a triangle.
- Solve the simultaneous equation using Cramer's rule.

$$x + 2y = -1; 2x - 3y = 12.$$

- A dealer has given 10% discount on a showpiece of ₹ 25,000. He collected 28% of GST on the discounted price. Find the total amount shown in the tax invoice. What is the amount of CGST and SGST?

Q4. Solve any two of the following questions.

(8)

- i) Solve the given simultaneous equation by graphical method. :
 $3x + 4y + 5 = 0$; $y = x + 4$.
- ii) A train travels 240 km with uniform speed. If the speed of the train is increased by 12 km/h, it takes one hour less to cover the same distance. Find the initial speed of the train.
- iii) There are 37 terms in an A.P. The sum of three terms placed exactly at the middle is 225 and the sum of last three terms is 429. Write the A.P.

Q5. Solve the following questions. (Any One).

(3)

- i) Product of two numbers is 352 and their mean is 19. Find the numbers.
- ii) Sum of present ages of Manisha and Savita is 31 years. Manisha's age 3 years ago was 4 times the age of Savita at that time. Find their present ages.



