SAIRAJ

Std. X (SSC) | **Maths-I** | **Time : 2 Hours**
Marks : 40 | **Preliminary Paper - 1**

Note : 1. All questions are compulsory.
2. Use of calculator is not allowed
3. The numbers to the right of the questions indicate full marks.
4. In case of MCQs [Q. No. 1 (A)] only the first attempt will be evaluated and will be given credit.
5. For every MCQ, four alternatives (A), (B), (C), (D) of answers are given. Alternative of correct answer is to be written in front of the sub-question number.

Q. 1 (A) Choose the correct answer and write the letter of the alphabet of it : **4**

1) If roots of quadratic equation are equal, then discriminant (D) is .....
A) Positive B) Negative C) Zero D) Any value

2) For drawing the graph of $5x + 2y = 16$, if $x = 2$, what is the value of y ?
A) 3 B) 8 C) -8 D) 13

3) In an AP, if $a = 7$, $d = 0$, then n^{th} term is :
A) $7n$ B) 7 C) n D) 0

4) Two coins are tossed. Probability of getting exactly one head is .....
A) $\frac{1}{4}$ B) $\frac{1}{3}$ C) $\frac{2}{3}$ D) $\frac{1}{2}$

B) Solve the following sub-questions : **4**

1) Decide whether (2, 3) is the solution of the equation $2x + y = 7$
2) Find d if $t_9 = 23$ and $a = 7$.
3) How much GST at 18% will Raju pay on MRP ₹ 45,000 of an article ?
4) A two digit number is formed with digits 0, 1, 2, 3 without repetition, Write the sample space and number of sample points n(S).

Q. 2 (A) Complete and write *any* <u>TWO</u> given activities and rewrite it : **4**

1) Complete the following activity to find the value x :

Activity : $6x + 4y = 8$ ... (I)

$+ \quad 3x - 4y = 10$ ... (II)

$\square x = \square$

$\therefore x = \boxed{\quad}$

$\therefore x = \square$

2) Complete the following activity :

Activity :

I am a quadratic equation : $-3(x - 4) = 2x^2$

↓

My $ax^2 + bx + c = 0$ form is : [ ]

↓

My values of a, b, c are : [ ]

3) Nazama is a proprietor of a firm, registered under GST. She has paid GST of ₹ 12,500 on purchase and collected ₹ 14,750 on sale. To find the amount of GST payable complete the activity.

Activity :

Input tax (ITC) = [ ]

Output tax = [ ]

GST Payable = Output tax – [ ]

= 14,750 – 12,500

Payable GST = [ ]

B) Solve the following sub-questions (*any four*) : **8**

1) Find D_x and D_y for solving the simultaneous equations $5x + 3y = -11$; $2x + 4y = -11$ using Cramer's rule.
2) If the Roots of a quadratic equation are -6 and 5 then form the quadratic equation.
3) In an A.P., $a = 7$, $d = 3$. Find t_{10}.
4) If Marked Price ₹ 5,000; discount 10%; GST 12% on selling price. Find invoice amount.
5) Expenditure : Rent ₹ 12,000; Food ₹ 9,000; Fees ₹ 6,000; Savings ₹ 3,000 (per month). Find central angle for food.

Q. 3 (A) Complete *any* <u>ONE</u> activity and rewrite it : **3**

1) 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 for ₹ 50,118 ? Complete the following activity.

Activity : Let us find the investment required or one share.

MV = ₹ 50

Brokerage at 0.2% on ₹ 50 = $50 \times \frac{0.2}{100}$ = ₹ [ ]

GST on brokerage at 18% = $0.1 \times \frac{18}{100}$ = ₹ [ ]

Investment for one share = ₹ 50 + ₹ [ ] + ₹ [ ]

= ₹ [ ]

The number of shares purchased by Aditya = $\frac{\text{Investment}}{\text{Investment for 1 share}}$

= $\frac{50118}{50.118}$ = [ ]

2) From three men and two women, environment committee of two persons is to be formed.
Condition for event A : One man, one woman committee to be formed.
Condition for event B : There should not be a woman member.

Activity :

A committee of two is to be formed out of 3 men and 2 women.

S = { } n(S) = ☐

Event A : The committee should contain one man and one women

A = $\{(M_1 W_1), (M_1 W_2), (M_2 W_1), (M_2 W_2), (M_3 W_1), (M_3 W_2)\}$

n(A) = ☐

$P(A) = \frac{n(A)}{n(S)} =$ ☐

Event B : There should not be a woman in the committee.

B = $\{(M_1 M_2), (M_1 M_3), (M_2, M_3)\}$

n(B) = ☐

$P(B) = \frac{n(B)}{n(S)} =$ ☐

B) Solve the following sub-questions (*any two*) : **6**

1) Solve the following simultaneous equations using Cramer's rule :
$4m - 2n = -4$; $4m + 3n = 16$
2) Solve using formula : $m^2 + 5m + 5 = 0$
3) A bag contains 3 red, 3 white, 3 green balls and 3 black balls. One ball is taken out of the bag at random. What is the probability that the ball drawn is -
i) white ii) not white
4) In the following table, the investment made by 210 families is shown. Present it in the form of a histogram.

Investment (Thousand Rupees)	10-15	15-20	20-25	25-30	30-35
No. of families	30	50	60	55	15

Q. 4 Solve the following sub-questions (*any two*) : **8**

1) The product of four consecutive natural numbers is 840. Find the numbers.
2) How many three-digit numbers are there divisible by 3? Find their sum.
3) The following frequency table shows the demand for a sweet and the number of customers. There are total 130 customers. Find the value of x and find the mode of demand of sweet.

Weight of sweet (gram)	0-250	250-500	500-750	750-1000	1000-1250
No. of customers	10	60	x	20	15

Q. 5 Solve the following sub-questions (*any one*) : **3**

1) Solve $2x + 3y = 11$ and $2x - 4y = -24$ and hence find the value of 'm' for which $y = mx + 3$.

2) The following pie-diagram shows percentage of persons according to the sales of a salesmen in a week. Answer the following questions :

i) Find the measure of central angle for each sales of salesmen.

ii) If the total sale is ₹ 72,000, find the total sale by the salesman B.