Maharashtra State Board

Class X Maths Algebra

Question Paper Set-2

Time 2 Hours **Marks : 40**

Notes

(i) All questions are compulsary.

(ii) Use of calculator is not allowed.

(iii) Total marks are shown on the right side of the questions.

Q 1. (A) Solve **any four** of the following. 4

(1) A = {1, 2, 3,4, 5}, B = {5, 6, 7} write AUB .

(2) Simplify $\sqrt{50}$

(3) Write a trinomial of degree 7.

(4) Convert 15 : 20 into percentage.

(5) If $3x + 5y = 9$ and $5x + 3y = 7$ find the value of $x + y$.

(6) Write the lower and the uppper class limit of 35 to 40

(B) Solve **any two** of the following. 4

(1) The yield of soyabean per acre in the farm of Mukund for 7 years was 10,7,5,3,9,6,9 quintal. Find the mean of yield per acre.

(2) Alka spends 90 % of the amount sent to her and saves Rs. 120 per month. Find the amount sent to her per month.

(3) If $P(y) = y^2 - 2y + 5$, find P(2) .

Q. 2 (A) Select the correct alternative answer and write it. 4

(1) If the roots of $x^2 + kx + k = 0$ are real and equal, what is the value of k?

(A) 0 (B) 4 (C) 0 or 4 (D) 2

(2) What is the sum of first 10 terms of the A. P. 15,10,5,.....?

(A) -75 (B) -125 (C) 75 (D) 125

(3) How many alpha numerals are there in the GSTIN of a registered dealer ?

(A)15 (B) 10 (C) 16 (D) 9

(4) What is the value of D if the equations $x + y = 3$; $3x - 2y = 4$ are solved by Cramer's method.

(A)5 (B) 1 (C) -5 (D) -1

(B) Solve **any two** of the following. **4**

(1) A card is drawn at random from a well shuffled pack of 52 playing cards. Find the probability that the card drawn is a spade.

(2) The age groups and the number of persons in the age groups, who donated blood in blood donation camp is given below. Find the measures of central angles to show the information by a pie diagram.

Age group (Years)	20-25	25-30	30-35	35-40
No of persons	80	60	35	25

(3) The market price of share is Rs. 200 and the rate of brokerage is 0.3%. Find the cost of one such share.

Q. 3 (A) Carry out any two of the following activities. **4**

(1) Complete the following table to draw the graph of the equation $x - y = 1$

x	0	☐
y	☐	0
(x, y)	☐	☐

(2) Fill up the boxes and find out the number of terms in the A.P.

1,3,5,....,149 .

Here $a = 1$, $d =$ ☐ , $t_n = 149$

$t_n = a + (n-1)\,d$

$\therefore$ 149 = ☐ $\therefore 149 = 2n -$ ☐

$\therefore n =$ ☐

(3) In a class of 42 students in Model High School, 3 students use spectacles. Fill in the following boxes to find the probability of a students selected at random is wearing sepctacles.

The total number of students in the class is 42.

$\therefore n(S) =$ ☐ ,

Let the event, a student uses spectacles, be A.

$\therefore n(A) =$ ☐

$\therefore$ P(A) = ☐ $\therefore$ P(A) = ☐

Q. 3 (B) Solve **any two** of the following. **4**

(1) Solve : $5m^2 - 22m - 15 = 0$

(2) $3x - 4y = 10$, $4x + 3y = 5$ find the values of Dx and Dy to solve the simultaneous equations by Cramer's method

(3) The first term and the common difference of an A. P. is 10,000 and 2000 resectively. Find the sum of first 12 terms of the A.P.

Q. 4 Solve **any three** of the following. **9**

(1) If α and β are the roots of the quadratice equation $x^2 - 2x - 7 = 0$, find the value $\alpha^2 + \beta^2$.

(2) How many of the three digit natural numbers are divisible by 5?

(3) The following table shows the investment made by some families. Show the information by a histogran.

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

(4) A two digit number is to be formed from the digits 0,1,2,3,4, without repetition of the digits. Find the probability that the number so formed is a prime number

Q. 5 Solve **any one** of the following. **4**

(1) Yogesh requires 3 days more than Vivek to do a work completely. If both of them work together, the work can be completed in 2 days. Find the number of days required for each of them to do the work completely.

(2) The following table shows the number of patients of different age groups admitted to a hospital for treatment on a day. Find the median of ages of the patients.

Age- group (Yrs.)	10–20	20–30	30–40	40–50	50–60	60–70
No. of patients	40	32	35	45	33	15

Q. 6 Solve **any one** of the following. **3**

(1) Krishna Electricals had bought a TV from a wholesaler at Rs 36000. The marked price on it in Krishna Electricals was Rs. 50000. If it was sold to Kalyan Deshmukh at 10% discount, calculate the input GST and output GST for Krishna Electricals if the rate of GST is 18%.

(2) Construct a word problem on simultaneous linear equations in two variables so that the value of one of the variables will be 10 (persons, rupees, metres, years etc.) and solve it.