

Farooq Sattar Oomerbhoy High School for Boys

MARKS -40

STD X MATHS -1 (ALGEBRA) 2022

Time : 2:15 hrs

- Note:**
- (i) All questions are compulsory
 - (ii) Use of calculator is not allowed.
 - (iii) Total marks are shown on the right side of the question.
 - (iv) Marks of constructions should be distinct. They should not be rubbed off.
 - (v) For question No. 1 (A) MCQ marks will be given only for the first attempt
 - (vi) The answer to every MCQ should be written as shown –Example 1 (A)

Q. 1 (A) Select the correct alternative and write it. 4

- 1) To solve $x + y = 3$; $3x - 2y - 4 = 0$ by determinant method find D
 A) 5 B) 1 C) -5 D) - 1
- 2) For an given A.P $t_7 = 4$ $d = -4$ then $a = ?$
 A) 6 B) 7 C) 20 D) 28
- 3) For $\sqrt{2}x^2 - 5x + \sqrt{2} = 0$ find the value of Discriminant.
 A) -5 B) 17 C) $\sqrt{2}$ D) $2\sqrt{2} - 5$
- 4) If $n(A) = 2$, $P(A) = 1/5$ then $n(S) = ?$
 A) 10 B) $5/2$ C) $2/5$ D) $1/3$

(B) Solve any two of the following. 4

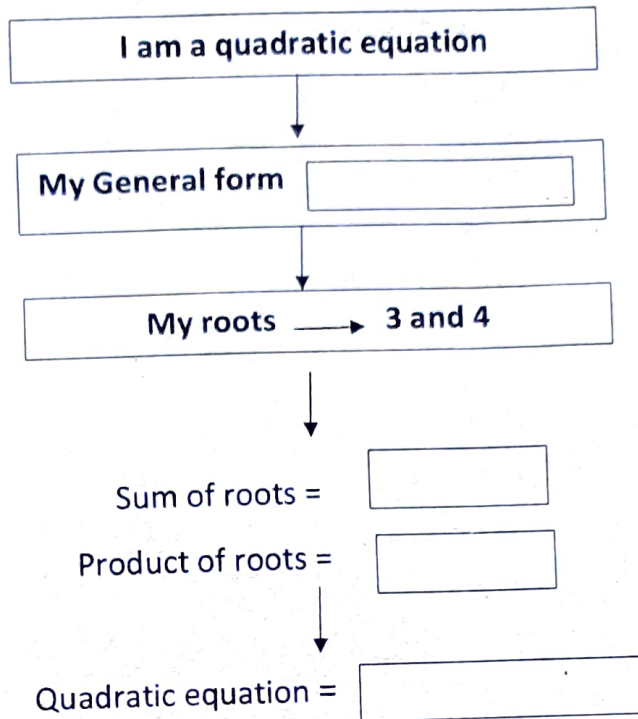
- 1) $15x + 17y = 21$; $17x + 15y = 11$ find $x - y$
- 2) Find a and d for an A.P., 1,4,7,10.....
- 3) One coin and One die thrown simultaneously Find S and $n(S) = ?$
- 4) Write the roots of following quadratic equation. $(p - 5) (p + 3) = 0$

Q. 2 (A) Complete any two of the following activities. 4

1) Complete the table to draw the graph of line $2X - 6Y = 3$

X	-5	<input type="text"/>
Y	<input type="text"/>	0
(X, Y)	<input type="text"/>	<input type="text"/>

2) Complete the following activity.



3) Find the sum of these 75 numbers $1 + 3 + 5 + \dots + 149$.

$a = 1$ and $d = 2$, $n = 75$

$$S_n = \frac{n}{2} [2a + (n-1)d]$$

$$S_n = \frac{n}{2} [2a + (n-1)\square]$$

$$S_n = \frac{75}{2} \times \square$$

$$S_n = \square$$

(B) Solve any four of the following sub questions.

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1) Solve the quadratic equation by formula $3m^2 + 2m - 7 = 0$

2) Solve the simultaneous equation using Cramer's Rule $x + 2y = -1$, $2x - y = 12$

3) The first term a and common difference d are given. Find first four terms of A.P.
 $a = -3$, $d = 4$

4) If one die is rolled then find the probability of event that the number on the upper face is greater than 6?

5) Find the 19th term of the following A.P.: $7, 13, 19, 25, \dots$

Q. 3(A) : Solve any one of the following activity.

1) Complete the following activity to find the sum of natural number from 1 to 140 which are divisible by 4.

From 1 to 140 natural number divisible by 4

4, 8, -----136

How many numbers, $n =$

$a = 4$ $d =$

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

$$136 = \text{} + (n - 1) \text{}$$

$$n = \text{}$$

$$S_n = \frac{n}{2} [2a + (n - 1)d]$$

$$S_{27} = \text{}$$

2) Six faces of a dice are shown below.



Find the probability vowels appear

$$S = \text{}$$

$$n(S) = \text{}$$

$$A = \text{}$$

$$n(A) = \text{}$$

$$P(A) = \frac{n(S)}{n(A)} = \frac{\text{>}}{\text{>}} = \text{>}$$

B) Solve any 2 of the following sub questions.

1) Difference between two numbers is 3, the sum of three times the bigger number and two times the smaller number is 19. Then find the numbers.

2) A balloon vendor has 2 red, 3 blue and 4 green balloons. He wants to choose one of them at random to give it to Pranali. What is the probability of the event that Pranali gets, (i) a red balloon (ii) a blue balloon

3) Sum of the roots of the quadratic equation is 5 and sum of their cubes is 35 then find the quadratic equation.

4) Solve: $99x + 101y = 499$; $101x + 99y = 501$

Q.4: Solve any two of the following sub questions. (Out of text book/ Challenging) 8

- 1) Time taken by a person to cover 150 km was 2.5 hrs more than the time taken in the return journey. If he return at a speed of 10 km/hr more than the speed while going. Find the speed per hour in each direction.
- 2) The semi perimeter of a rectangular shape garden is 36 m. The length of the garden is 4 m more than its breadth. Find the length and the breadth of the garden.
- 3) In winter, the temperature at a hill station from Monday to Friday is in A.P. The sum of the temperatures of Monday, Tuesday and Wednesday is zero and the sum of the temperatures of Thursday and Friday is 15. Find the temperature of each of the five days.

Q.5: Solve any one of the following sub questions. 3

- 1) in ΔBAC , $\angle C = 3\angle B = 2(\angle A + \angle B)$ if $\angle A = X$ and $\angle B = Y$ then form the pair of linear equation and find $\angle A$, $\angle B$, $\angle C$.
- 2) 1800 families with 2 children were selected randomly and following data were recorded

Number of family	700	850	250
Number of girls	2	1	0

Find the probability of family chosen at random.

- a) 2 Girls
- b) 1 girl
- c) no girls