LITTLE FLOWER CONVENT HIGH SCHOOL, SOLAPUR
PRELIM EXAM - 2021-2022

Std-X **Marks : 40**

Sub : Mathematics -I **Time :-2 Hours**

Q.1.A] Choose the correct alternative for the questions given below: [4]
(Write only option alphabet in capital letters)

1) For drawing the graph of $2x + 5y = 16$, if $x = 3$, then what is the value of y ?
A] -2 B] 2 C] $\frac{-1}{2}$ D] $\frac{1}{2}$

2) Which of the following quadratic equations has root -2 and 7
A] $x^2 + 5x - 14 = 0$ B] $x^2 - 5x - 14 = 0$ C] $x^2 + 5x + 14 = 0$ D] $x^2 - 5x + 14 = 0$

3) What is the sum of first 30 natural numbers?
A] 461 B] 462 C] 464 D] 465

4) Two coins are tossed simultaneously. What is the probability of getting at least one head?
A] $\frac{3}{4}$ B] $\frac{1}{2}$ C] $\frac{1}{4}$ D] $\frac{2}{3}$

Q.1.B] Solve the following [4]

1) Find the value of the discriminant of the equation $x^2 + 10x - 7 = 0$
2) For simultaneous equations in variables x and y , $Dx = 49$, $Dy = -63$, $D = 7$ then find the value of x and y ?
3) Find the next two terms of A.P. 5, 12, 19, 26, …….
4) Three coins are tossed simultaneously. Write sample space 'S' and number of sample point n(S)

Q.2. Complete and write any two activities from the following [4]
(Compulsory boxes should be made with scale and pencil)

1) Complete the following activity to find out, how many three-digit natural numbers are divisible by 5.
Three-digit natural numbers divisible by 5 are
100, 105, 110, ……, 995
There $a = 100$, $d =$ ☐ , $t_n = 995$

$t_n =$ ☐ …… formula

$\therefore\ 995 = 100 + (n - 1) \times 5$

$995 =$ ☐

$n =$ ☐

2) In a class of 48 students, 4 students use spectacles. Complete the following activity to find the probability of a student selected at random not wearing spectacles.
Activity :- The total number of students is the class is 48

$\therefore n(S) =$ ☐

Let A be the event that a student not wearing spectacles

Then $n(A) =$ ☐

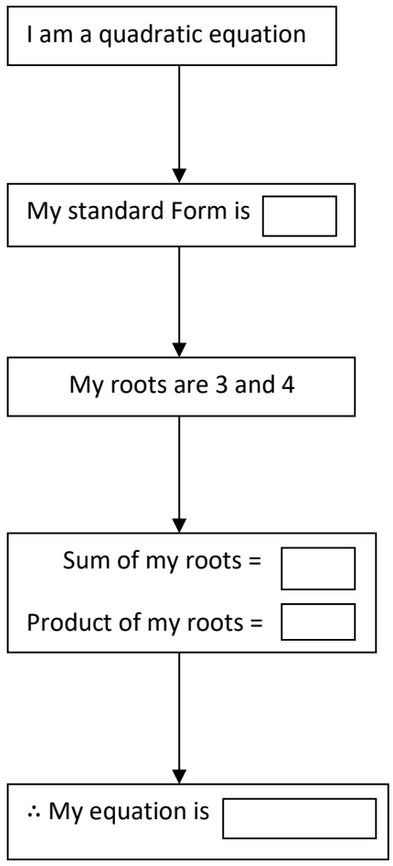
$\therefore P(A) = \frac{n(A)}{n(S)}$

$P(A) = \frac{\square}{48}$

$P(A) = \frac{\square}{\square}$

...cont...

3) Form a quadratic equation, by completing the activity given below:



Q.2.B] Solve any four sub-questions from the following **[8]**

1) Find the 27th term of the AP 9, 4, -1, -6, ……...

2) Determine whether the value given against the quadratic equation are the roots of the equation or not

$X^2 + 4x - 5 = 0$; $x = 1$

3) A box contains 5 red, 8 blue and 3 green pens. What is the probability that the pen picked up is blue ?
4) Write the quadratic equation **$7x = x^2 + 6$** in the form of $ax^2 + bx + c = 0$ then write the value of a, b and c
5) Find the value of (x + y) and (x – y) ,if $12x + 13y = 29$; $13x + 12y = 21$

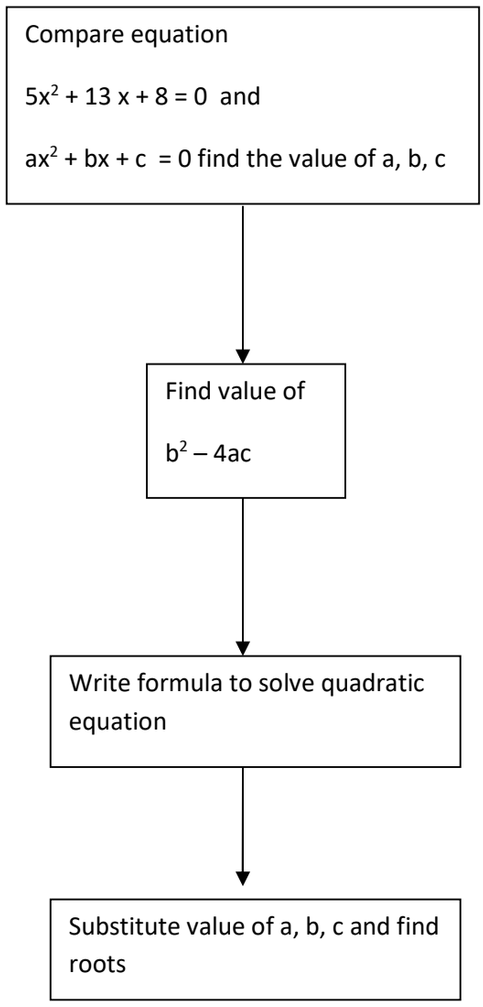
...cont...

Q.3.A] Complete any one activity of two **[3]**

(Compulsory boxes should be made with scale and pencil)

1) With the help of flow cart given below solve the equation

$5x^2 + 13x + 8 = 0$ using the formula



2) To solve simultaneous equations $x + 2y = 4$; $3x + 6y = 12$ graphically. Following are the ordered pairs given below. Complete the table given below and then draw the graph.

$x + 2y = 4$

Points / Co - ordinates	P	Q	R
(X , Y)	(□ , 3)	(0 , 2)	(2 , 1)

$3x + 6y = 12$

Points / Co – ordinates	L	M	N
(x , y)	(- 4, 4)	(1 , □)	(8 , -2)

What conclusion can you draw when two equations are given but the graph as only one line.

…cont…

Q.3. B] Solve any two, out of four **[6]**

1) Solve the quadratic equation $(2x + 3)^2 = 25$

2) A card is drawn from a wall shuffled pack of 52 playing cards. Find the probability of each event the card drawn is

i) A red card

ii) a face card

iii) a Ace card

3) The 10^{th} term and the 18^{th} term of an A P are 25 and 41 respectively then find the 38^{th} term

4) Sum of present age of Manish and Savita is 31. Manish's age 3 years ago was 4 times the age of Savita. Find their present age.

Q.4. Solve the following questions (any two) **[8]**

1) A sanitation committee of two members is to be formed from 3 boys and 2 girls. Write sample space 'S' and number of sample point n(S) . Also write the following events in set form and number of sample points in the event

i) Condition for event A :- at least one girl must be a member of the committee

ii) Condition for event B :- Committee must be one boy and one girl

iii) Condition for event C :- At the most one girl should be a member of the committee

2) Solve the given simultaneous equation by Cramer's rule

$$\frac{x+y-8}{2} = \frac{x+2y-1}{3} = \frac{3x-y}{4}$$

3) A tank fills completely in 2 hours if both the taps are open, if only one tap is open at the given time. The smaller tap takes 5 hours more than the larger one to fill the tank . How much time does each tap take to fill the tank completely.

Q.5] Solve the following questions (any one) **[3]**

1) A student made a cube shaped die from a card sheet. Instead of writing 1, 2, 3, 4, 5, 6 on its face, he wrote letter a, b, c, d, e, f - one on each face, randomly. If he rolls the die twice, find the probability that he gets a vowel on the upper face both times.

2) Kargil temperature was recorded in a week from Monday to Saturday. All readings were in A.P. The sum of temperatures of Monday and Saturday was 5^0C more than sum of temperatures of Tuesday and Saturday. If temperature of Wednesday was $– 30^0$ Celsius then find the temperature on the other five days.

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