JVM'S NEW ENGLISH SCHOOL AND JR. COLLEGE, KALWA.

I PRELIMINARY EXAM 2021-22

STANDARD: X **SUBJECT: MATHS - I** **MARKS: 40**

Note: (i) All questions are compulsory.
(ii) Use of calculator is not allowed.
(iii) Figures to the right of questions indicate full marks.
(iv) Assessment will be done for the first attempted answer to MCQ (Q.1.A).
(v) Write the correct alternative letter [(A),(B),(C),(D)] only for MCQ.

Q.I. A. Choose correct alternative for each of the following questions: **(04)**

1) What is the value of K if (K,5) is the solution of the simultaneous equations 4x+3y=19 and 4x-3y= -11?
(a) 6 (b) 1 (c) 4 (d) 5

2) If one of the roots of the quadratic equation Kx^2+2x-8=0 is -2, then what is the value of K?
(a) 2 (b) 3 (c) 1 (d) 4

3) If for an A.P. d=10 what is the value of t_6-t_2?
(a) 10 (b) 20 (c) 30 (d) 40

4) If P(B)=0.75, n(s)=100 then what is n(B)?
(a) 25 (b) 75 (c) 750 (d) $\frac{3}{4}$

B. Solve the following: **(04)**

1) A die is rolled. Find the probability of getting a prime number.
2) Find the 10^{th} term of the A.P. if a=1 and d=1.
3) Write the value of a,b,c for the following quadratic equation:
$5x^2$-2=-6x
4) Find the value of x+y if 5x-2y=4 and x+8y=26.

Q.II A. Complete any two of the following activities **(04)**

1) Complete the following activity to draw the graph of 3x-y=2.

X	☐	-1
Y	1	☐
(X,Y)	☐	☐

2) Complete the following activity to find the value of K, if the roots of $2x^2$-6x+K=0 are real and equal. Here a=2, b=-6, c=K
The roots are real and equal.
b^2-4ac = ☐
b^2 −4ac = ☐ -4(2)(K)=0
∴ ☐ -8K=0
∴ 8K=36
K = ☐

3) Complete the following activity to find the two digit numbers which are divisible by 4.
The two – digit numbers divisible by 4 are 12, 16, 20 ---------- 96.
Here a=12, d=4, tn=96
tn=a+(n-1)d
∴ ☐ = 12+(n-1) x ☐
☐ = 12+4n-4
∴ 4n = ☐
∴ n = 22

B. Solve (Any 4) **(08)**

1. If the value of the determinant $\begin{vmatrix} m & 2 \\ -5 & 7 \end{vmatrix}$ is 31, find the value of m
2. Find 'K' if x=3 is a root of equation K x^2-10x+3=0
3. Solve the following equation by factorisation.
m^2-11=0

4. 11, 8, 5, 2 ..... In this A.P. which term is number -151?
5. A card is drawn at random from a pack of well shuffled 52 playing cards. Find the probability that the card drawn is a spade.

Q.III A. Complete the following activity (Any one) **(03)**

1. If x=-5 is a root of the quadratic equation $Kx^2 + 13x + 10 = 0$ then complete the following activity to find the value of K.

   Solution:

   One root of the quadratic equation $Kx^2 + 13x - 10 = 0$ is -5.

   Substitute x=-5 in the equation

   ∴ K□ ^{2} +13 □ -10=0

   ∴ □ -65-10=0

   ∴ 25k = □

   ∴ K = □

   ∴ The value of K is □

2. Two digit numbers are formed from the digits 0,1,2,3 without repetition. Complete the following activity to find the probability that the number so formed in a prime number.

   Solution:

   The sample space

   S= { □ }

   ∴ n(S)= □

   Let A be the event that the number so formed is a prime number.

   Then A = {□}

   ∴ n(A) = □

   ∴ P (A) = $\frac{n(A)}{n(s)}$

   ∴ P(A) = □

   ∴ The probability that the number formed in a prime number is □

B. Solve (Any 2) **(06)**

1. Solve the following simultaneous equations graphically:
   x+y=5 and 3x-y=3
2. Solve using formula $3m^2+2m-7=0$.
3. Find the sum of all numbers from 150 to 200 which are divisible by 7
4. If three coins are tossed simultaneously, then find the probability of the following events.
   i) Event A: No head appears
   ii) Event B: Head appears at least twice
   iii) Event C: Head appears twice.

Q.IV. Solve the following (Any 2) **(08)**

1. A jar contains 24 marbles. Some are green and others are blue. If a marble is drawn at random from the jar the probability of it being green is 2/3. Find the number of blue marbles in the jar.
2. In a two digit number the digit at the units place is equal to the square of the digit at tens place. If 18 is added to the number the digit got interchanged. Find the number.
3. Vedant can row downstream 24 KM in 2 hours and upstream 8 km in 2 hours. Find his speed of rowing in still water and the speed of the water current.

Q.V. Solve (Any 1) **(03)**

1. Construct a word problem on simultaneous lineair equation in two variables so that the value of one of the variables will be 10. Also solve it.
2. Is 5,8,11,14 ..... an A.P.? If so then what will be the 100^{th} term? Check whether 92 and 61 are in this A.P.

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