I SEMESTER EXAMINATION
2017-2018

Std. : X **Marks: 40**
Date: 06-10-17 **Sub: MATHS I [ALGEBRA]** **Time: 2 hrs.**

Q.1] Solve the following (Any 5) (5)

1. Find the value of 'm' in the equation m – 3n = 1, if n = 2.
2. Write the third term of the quadratic equation $p^2 - 2p = 0$, so that it will become a perfect square.
3. A die is thrown. A is the event of getting an odd number. Write the event of A.
4. Write the third term of the A.P; if a = 3, d = 2.5
5. If one of the roots is 2 + 5, then find the value of $\alpha + \hat{a}$.
6. Find the value of the discriminant of $x^2 + 4x + 1 = 0$.

Q.2] Solve the following (Any 4) (8)

1. Solve the quadratic equation $x^2 - 17x + 60 = 0$ by factorization method.
2. Mary got a job with a starting salary of Rs.15000 per month. She will get an increment of Rs.100 per month. What will be her salary after 20 months?
3. One card is drawn from a pack of well shuffled pack of 52 playing cards. What is the probability of getting a face card?
4. If the value of the determinant $\begin{vmatrix} 3 & 6 \\ p & 12 \end{vmatrix}$ = 60, find p.
5. Complete the following table for 2x + y = 1.

X	1	_____
Y	_____	–5
(x,y)	_____	_____

6. Find the first two terms of the sequence $S_n = \frac{n(n+1)}{2}$

Q.3] Solve the following (Any 3) (9)

1. Find the value of k for which the quadratic equation $(k - 12)x^2 + 2(k - 12)x + 2 = 0$ has real and equal roots.

2. A die is thrown.
    a. P is the event of getting an odd number.
    b. Q is the event of getting an even number.
    c. R is the even of getting a prime number.

Write n(S), n(P), n(Q), n(R). Mention the type of events.

3. If $\alpha + \hat{a} = 5$ & $\alpha^3 + \hat{a}^3 = 35$, then find the Quadratic equation whose roots are α & $\hat{a}$.
4. The sum of the squares of two consecutive even natural numbers is 100. Find the numbers.
5. Solve $9m^2 - 12m = -2$ by completing square method.

Q.4] Solve the following (Any 2) (8)

1. Solve the following simultaneous equations using graphical method: $x + 2y = 5$; $y = -2x - 2$.
2. The 11^{th} term and 21^{st} term of an A.P. are 16 and 29 respectively, then find:
    a. The first term and common difference.
    b. The 34^{th} term.
    c. 'n' such that $t_n = 55$.
3. Solve the following equation: $3(x^2 + 1/x^2) - 4(x - 1/x) - 6 = 0$.

Q.5] Solve the following (Any 2) (10)

1. A game of chance consists of spinning an arrow which comes to rest pointing at one of the numbers from 1 to 8. What is the probability that it will point at (a) 8, (b) an odd number (c) a number greater than 2 (d) number greater than 8.
2. Find the sum of all members from 50 to 350 which are divisible by 6. Hence, find the 15^{th} term of that A.P.
3. A rectangular playground is 420 sq.m. If the length is increased by 7m and breadth is decreased by 5m, the area remains the same. Find the length and breadth of the playground?