RK VISION ACADEMY

NEET | IIT – JEE | FOUNDATION

CBSE PRACTICE PAPER(2024)

(Mathematics)

Grade : X   **Marks: 40**
marks

Chapter: Quadratic equations   SET-1   **Time: 90**
minutes

SECTION A

(This section comprises of Multiple-choice questions (MCQ) of 1 mark each.)

1. What is the nature of roots of the quadratic equation $5y^2 - 4y + 3 = 0$?

   (a) Four real roots   (b) Two real roots   (c) No real root   (d) One real root

2. The quadratic equation $9x^2 + 6kx + 4 = 0$ has equal roots. Then, the value of k is

   (a) 2, -2   (b) 2, 2   (c) 0, 2   (d) none of these

3. The non zero value of k for which the quadratic equation $3x^2 - kx + k = 0$ has equal roots, is

   (a) 10   (b) 11   (c) 12   (d) 14

4. If $2x^2 + bx + 8 = 0$ to have non-real roots, then the interval for b is

   (a) $-8 < b < 8$ (b) $-6 < b < 6$ (c) $-8 > b > 8$ (d) None of these

5. If a number x is added to twice its square, then the resultant is 21, then, the quadratic representation of this statement is

   (a) $2x^2 - x + 21 = 0$ (b) $2x^2 + x - 21 = 0$ (c) $2x^2 - x - 20 = 0$ (d) None of these

6. Which of the following is not a quadratic equation?

   (a) $x^2 + 5x - 3 = 0$ (b) $x^2 + x^3 + 7 = 0$ (c) $3 + x + x^2 = 0$ (d) $x^2 - 36 = 0$

7. The discriminant of the quadratic equation $6x^2 - 7x + 2 = 0$ is

   (a) 0   (b) -1   (c) 1   (d) 2

8. Which one of the following is not a quadratic equation?

   (A) $(x + 2)^2 = 2(x + 3)$ (B) $x^2 + 3x = (-1)(1 - 3x)^2$ (C) $(x + 2)(x - 1) = x^2 - 2x - 3$ (D) $x^3 - x^2 + 2x + 1 = (x + 1)^3$

9. Which of the following equations has 2 as a root?

   (A) $x^2 - 4x + 5 = 0$ (B) $x^2 + 3x - 12 = 0$ (C) $2x^2 - 7x + 6 = 0$ (D) $3x^2 - 6x - 2 = 0$

10. Assertion (A) $5x^2 + 14x + 10 = 0$ has no real roots.
    Reason (R) $ax^2 + bx + c = 0$ has no real roots if $b^2 < 4ac$

    (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A)

    (b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A)

    (c) Assertion (A) is true but Reason (R) is false

    (d) Assertion (A) is false but Reason (R) is true

SECTION B
(This section comprises of very short answer type-questions (VSA) of 2 marks each)

11. Without solving the following quadratic equation, find the value of m for which the given equation has real and equal roots. $x^2 + 2(m-1)x + (m+5) = 0$

12. Find the nature of roots of the following quadratic equations. In case real roots exist, find them
    (i) $4x^2 + 12x + 9 = 0$
    (ii) $3x^2 + 5x - 7 = 0$

13. Solve the following quadratic equation $6x^2 + 7x - 10 = 0$.

SECTION C
(This section comprises of short answer type questions (SA) of 3 marks each)

14. Find the value(s) of k for which the following equations has equal roots $(k-12)x^2 + 2(k-12)x + 2 = 0$

15. Find the roots of the following equation $\dfrac{1}{x+4} - \dfrac{1}{x-7} = \dfrac{11}{30}$

16. Solve for x, $2(2x+3/x-3) - 25(x-3/2x+3) = 5$.

SECTION D
(This section comprises of long answer-type questions (LA) of 5 marks each)

17. Ram and Shyam together have 55 marbles. Both of them lost 5 marbles each and the product of the number of marbles they have is 164. Find out how many marbles they had to start with?

18. Solve the quadratic equation $9x^2 - 9(a+b)x + (2a^2 + 5ab + 2b^2) = 0$ by factorisation method.

19. Find the solution of the following equation by factorisation method.
    $x+1/x-1 - x-1/x+1 = 5/6$,