QUESTION BANK - CHAPTER - 2
QUADRATIC EQUATIONS

1 MARK QUESTIONS

(1) Choose the correct alternative from the following :

(i) $\sqrt{5}m^2 - \sqrt{5}m + \sqrt{5} = 0$ which of the following statement is true for this given equation ?

(A) Real and uneual roots (B) Real and equal roots
(C) Roots are not real (D) Three roots.

(ii) Out of the following equations, find the equation having the sum of its roots –5.

(A) $3x^2 - 15x + 3 = 0$ (B) $x^2 - 5x + 3 = 0$
(C) $x^2 + 3x - 5 = 0$ (D) $3x^2 + 15x + 3 = 0$

(iii) The roots of $x^2 + kx + k = 0$ are real and equal, find k.

(A) 0 (B) 4
(C) 0 or 4 (D) 2

(iv) For $\sqrt{2}x^2 - 5x + \sqrt{2} = 0$ find the value of the discriminant.

(A) –5 (B) 17
(C) $\sqrt{2}$ (D) $2\sqrt{2} - 5$

(v) Which one is the quadratic equation ?

(A) $\frac{5}{x} - 3 = x^2$ (B) $x(x + 5) = 2$
(C) $n - 1 = 2n$ (D) $\frac{1}{x^2}(x + 2) = 2$

(vi) Out of the following equations which one is not a quadratic equation ?

(A) $x^2 + 4x = 11 + x^2$ (B) $x^2 = 4x$
(C) $5x^2 = 90$ (D) $2x - x^2 = x^2 + 5$

(vii) One of the roots of equation $x^2 + mx - 5 = 0$ is 2; find m.

(A) –2 (B) $-\frac{1}{2}$
(C) $\frac{1}{2}$ (D) 2

(2) Compare the given quadratic equation to the general form and write values of a, b, c.

(i) $y^2 = 7y$ (ii) $2m^2 = 5m - 5$
(iii) $x^2 - 7x + 5 = 0$ (iv) $(x - 1)^2 = 2x + 3$

(3) Decide which of the following are quadratic equations.

(i) $(m + 2)(m - 5) = 0$

(ii) $x + \frac{1}{x} = -2$

(iii) $x^2 + 5x - 2 = 0$

(iv) $y^2 = 5y - 10$

(v) $x^2 + 2x + 11 = 0$

(4) Find the value of discriminant.

(i) $\sqrt{2}x^2 + 4x + 2\sqrt{2} = 0$

(ii) $2y^2 - 5y + 10 = 0$

(iii) $x^2 + 7x - 1 = 0$

(5) Write any two quadratic equations.

2 MARK QUESTIONS

(1) Determine whether the values given against the quadratic equation are the roots of the equation.

(i) $x^2 + 4x - 5 = 0$, $x = 1, -1$

(ii) $2m^2 - 5m = 0$, $m = 2, \frac{5}{2}$

(iii) $y^2 + 5y + 6 = 0$; $y = 4, -2$

(iv) $x^2 + 5x - 14 = 0$, $x = \sqrt{2}, -7$

(v) $2p^2 + 5p - 3 = 0$, $p = 1, \frac{1}{2}$

(vi) $n^2 + 4n = 0$, $n = 0, -2$

(2) Solve the following equation by factorization method.

(i) $y^2 + 3y - 18 = 0$

(ii) $x^2 + 5x + 6 = 0$

(iii) $y^2 - 16y + 63 = 0$

(iv) $x^2 - 13x + 30 = 0$

(v) $x^2 + 10x + 24 = 0$

(vi) $x^2 - 5x + 6 = 0$

(3) Determine the nature of roots for the quadratic equation.

(i) $m^2 - 2m + 1 = 0$

(ii) $\sqrt{3}x^2 + \sqrt{2}x - 2\sqrt{3} = 0$

(iii) $3x^2 - 5x + 7 = 0$

(iv) $m^2 + 2m + 9 = 0$

(v) $2y^2 - 7y + 2 = 0$

(v) $x^2 - 4x + 4 = 0$

(4) Form the quadratic equation from the roots given :

(i) 3 and –10.

(ii) 0 and 4.

(iii) $\frac{1}{2}, -\frac{1}{2}$

(iv) 0 and 7

(v) $1 - 3\sqrt{5}$ and $1 + 3\sqrt{5}$

(vi) 10 and -10

3 MARK QUESTIONS

(1) Solve the following quardratic equation by factorization method.

(i) $5z^2 - 3z - 2 = 0$ (ii) $9y^2 - 3y - 2 = 0$

(iii) $7m^2 - 84 = 0$ (iv) $5x^2 - 22x - 15 = 0$

(v) $3x^2 - x - 10 = 0$ (vi) $2x^2 - 5x - 3 = 0$

(2) Solve the following quadratic equation by completing square.

(i) $3y^2 + 7y + 1 = 0$ (ii) $4p^2 + 7 = 12p$

(iii) $6m^2 + m = 2$ (iv) $2y^2 + 5y + 1 = 0$

(v) $5m^2 + m = 3$ (vi) $3p^2 + 4 = -7p$

(3) Solve the following quadratic equation by using formula :

(i) $5m^2 - 2m = 2$ (ii) $7x + 1 = 6x^2$

(iii) $2x^2 - x - 4 = 0$ (iv) $3y^2 + 7y + 4 = 0$

(v) $2n^2 + 5n + 2 = 0$ (vi) $7p^2 - 5p - 2 = 0$

(4) Find the value of *k*.

(i) If one root of the quadratic equation $x^2 - 7x + k = 0$ is 4.

(ii) If one root of the quadratic equation $3y^2 - ky + 8 = 0$ is $\frac{2}{3}$.

(iii) If $x = 4$ is the solution of the equation $3x^2 + kx - 2 = 0$

(iv) If one root of the quadratic equation $kx^2 - 7x + 12 = 0$ is 3.

(5) Find the value of *k* for which given equation has real and equal roots :

(i) $k^2x^2 - 2(k - 1)x + 4 = 0$

(ii) $(m-1)x^2-2(m-1)x+1=0$

(iii) $(k - 12)x^2 + 2(k - 12)x + 2 = 0$

(iv) $3y^2 + ky + 12 = 0$

(v) $kx(x - 2) + 6 = 0$

4 MARK QUESTIONS

(1)

(i) Sum of the roots of a quadratic equation is double their product. Find k if equation is $x^2 - 4kx + k + 3 = 0$

(ii) The sum of two roots of a quadratic equation is 5 and sum of their cubes is 35, find the equation.

(iii) The difference between the roots of the equation $x^2 - 13x + k = 0$ is find k.

(2) **α, β are roots of $y^2 - 2y - 7 = 0$ find,**

(i) $\alpha^2 + \beta^2$ (ii) $\alpha^3 + \beta^3$

(iii) $\alpha^3 + \beta^3$ (iv) $\alpha^2 + \beta^2$

(3) **Solve the following :**

(i) Mr. Kasam runs a small business of making earthen pots. He makes certain number of pots on daily basis. Production cost of each pot is ₹40 more than 10 times total number of pots, he makes in one day. If production cost of all pots per day is ₹600, find production cost of one pot and number of pots he makes per day.

(ii) Pratik takes 8 hours to travel 36 km downstream and return to the same spot. The speed of boat in still water is 12 km per hour. Find the speed of water current.

(iii) Vivek is older than Kishor by 5 years. The sum of the reciprocals of their ages is $\frac{1}{6}$. Find their present ages.

(iv) Pintu takes 6 days more than those of Nishu to complete certain work. If they work together they finish it in 4 days. How many days would it take to complete the work if they work alone.

(v) Mukund possesses ₹50 more than what Sagar possesses. The product of the amount they have is 15,000. Find the amount each one has.

(vi) Mr. Dinesh owns an agricultuaral farm at village Talvel. The length of the farm is 10 meter more than twice the breadth. In order to harvest rain water, he dug a square shaped pond inside the farm. The side of pond is $\frac{1}{3}$ of the breadth of the farm. The area of the farm is 20 times the area of the pond. Find the length and breadth of the farm and of the pond.

(vii) The difference between squares of two numbers is 120. The square of smaller number is twice the greater number. Find the numbers.

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

(ix) Ranjana wants to distribute 540 oranges among some students. If 30 students were more each would get 3 oranges less. Find the number of students.