CLASS X – MATHEMATICS – CHAPTER 04
QUADRATIC EQUATION

Name: Date:

CHOOSE THE CORRECT OPTION FROM QUES 1 TO 19

Q01. If α and β are the roots of the equation $5x^2 - 7x + 1 = 0$, then the value of $\frac{1}{\alpha} + \frac{1}{\beta}$ is

(a) 7   (b) 9   (c) 6   (d) 8

Q02. Construct the quadratic equation whose roots are $\sqrt{3}$ and $3\sqrt{3}$ is

(a) $x^2 - \sqrt{3}x + 3\sqrt{3} = 0$ (b) $x^2 + 4\sqrt{3}x + 9 = 0$ (c) $x^2 - 4\sqrt{3}x + 9 = 0$ (d) $x^2 + 2x + 3 = 0$

Q03. If the roots of the quadratic equation $ax^2 + bx + c = 0$ are equal then

(a) $b^2 = 4bc$ (b) $a^2 = 4bc$ (c) $c^2 = 4ab$ (d) $b^2 = 4ac$

Q04. If the quadratic equation $ax^2 + bx + c = 0$ has a real root, then $b^2 - 4ac$ must be

(a) ≥ 0 (b) $= 0$ (c) ≤ 0 (d) > 0

Q05. Which of the following is quadratic equation?

(a) $x^3 - 2x - \sqrt{5} - x = 0$ (b) $3x^2 - 5x + 9 = x^2 + 3$ (c) $(x + \frac{1}{x})^2 = 3(x + \frac{1}{x}) + 4$ (d) $x^3 + x + 3 = 0$

Q06. Factor of $a^2x^2 - 3abx + 2b^2 = 0$ is

(a) $\frac{2b}{a}, \frac{b}{a}$ (b) $\frac{3b}{a}, \frac{a}{b}$ (c) $\frac{b}{a}, \frac{a}{b}$ (d) $\frac{a}{b}, \frac{a}{b}$

Q07. Value of x for $x^2 - 8x + 15 = 0$ is quadratic formula is

(a) 3,2   (b) 5,2   (c) 5,3   (d) 2,3

Q08. Discriminate of $\sqrt{3}x^2 - 2\sqrt{2}x - 2\sqrt{3} = 0$ is

(a) 30   (b) 31   (c) 32   (d) 35

Q09. Which of the following have real root

(a) $2x^2 + x - 1 = 0$ (b) $x^2 + x + 1 = 0$ (c) $x^2 - 6x + 6 = 0$ (d) $2x^2 + 15x + 30 = 0$

Q10. If one root of the equations $2x^2 + ax + 3 = 0$ is 1 find the value of a.

(a) $= -4$ (b) $= -5$ (c) $= -3$ (d) $= -1$

Q11. Find k for which the quadratic equations $4x^2 - 3kx + 1 = 0$ has equal root.

(a) $= \pm\frac{3}{4}$ (b) $= \frac{3}{4}$ (c) $= \pm\frac{4}{3}$ (d) $= \pm\frac{2}{3}$

Q12. Solve by factorization $\sqrt{3}x^2 + 10x + 7\sqrt{3} = 0$

(a) $x = -\sqrt{3}, -7/3$ (b) $x = -\sqrt{3}, \frac{7}{\sqrt{3}}$ (c) $x = 2, \frac{1}{2}$ (d) ± 3

Q13. The quadratic equation whose root are 3 and -3 is

(a) $x^2 - 9 = 0$ (b) $x^2 - 3x - 3 = 0$ (c) $x^2 - 2x + 2 = 0$ (d) $x^2 + 9 = 0$

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Q14. The product of two Consecutive positive integers is 306. The quadratic equation is

(a) $x^2 + x - 306 = 0$ (b) $x^2 - x + 306 = 0$ (c) $x^2 + 2x - 106 = 0$ (d) $x^2 - x - 306 = 0$

Q15. Which is a quadratic equation?

(a) $x^2 + x + 2 = 0$ (b) $x^3 + x^2 + 2 = 0$ (c) $x^4 + x^2 + 2 = 0$ (d) $x + 2 = 0$

Q16. Discriminant of $-x^2 + \frac{1}{2}x + \frac{1}{2} = 0$

(a) $-\frac{1}{2}, 1$ (b) $\frac{1}{2}, 1$ (c) $-\frac{1}{2}, -1$ (d) $\frac{1}{2}, -\frac{1}{2}$

Q17. For equal root, $kx(x - 2) + 6 = 0$ value of k is

(a) k = 6   (b) k = 3   (c) k = 2   (d) k = 8

Q18. Quadratic equations whose roots are $(2 + \sqrt{5})$, $(2 - \sqrt{5})$ is

(a) $x^2 - 4x - 1 = 0$ (b) $x^2 + 4x + 1 = 0$ (c) $x^2 + (x + \sqrt{5})x - (2\sqrt{5}) = 0$ (d) $x^2 - 4x + 2 = 0$

Q19. If α and β are root of the equations $3x^2 + 5x - 7 = 0$, then $\alpha\beta$ equal to

(a) $\frac{7}{3}$ (b) $-\frac{7}{3}$ (c) $-\frac{5}{3}$ (d) 21

Q01. Determine whether the given values are solution of the equation or not $x^2 + \sqrt{2}x - 4 = 0$, $x = \sqrt{2}$, $x = -2\sqrt{2}$.

Q02. If $x = -2$ and $x = -\frac{1}{5}$ are solution of the equation $5x^2 + px + R = 0$, find the value of P and R.

Q03. Find K for which the given value is solution of the equation $x^2 + 3ax + k = 0$, $x = -a$

Q04. If a, b are roots of the quadratic equation $Kx^2 + 4x + 4 = 0$, find the value of K such that $\alpha^2 + \beta^2 = 24$

Q05. Solve $[12abx^2 - 9a^2x + 8b^2x - 6ab = 0]$

Q06. Solve for x by quadratic formula $[P^2x^2 + (p^2 - q^2)x - q^2 = 0]$

Q07. Solve for x: $[5^{x+1} + 5^{1-x} = 26]$

Q08. Solve for x: $[\sqrt{217 - x} = x - 7]$

Q09. Solve for x: $[a^2b^2x^2 + b^2x - a^2x - 1 = 0]$

Q10. Solve by quadratic formula $(ax^2 + bx + c = 0)$, $a \neq 0$.

Q11. Solve by factorization $[x + \frac{1}{x}] = \frac{122}{11}$

Q12. Find the value of K for which the quadratic equation $kx^2 + 2x + 1 = 0$, has real and distinct root.

Q13. If -4 is a root of the quadratic equation $x^2 + px - 4$, and the quadratic equation $x^2 + px + k = 0$ has equal root, find the value of K.

Q14. Determine the nature of the roots of the Quadratic equation $[9a^2b^2x^2 - 24abcdx + 16c^2d^2 = 0]$

Q15. Find the discriminant of $(x-1).(2x-1) = 0$

Q16. Find the value of K so that $(x-1)$ is a factor of $k^2x^2 - 2kx - 3$

Q17. Solve for x by factorization method $\dfrac{1}{p+q+x} = \dfrac{1}{p} + \dfrac{1}{q} + \dfrac{1}{x}$.

Q18. Solve for x by the method of completing the square $5x^2 - 6x - 2 = 0$.

Q19. The sum of two number is 16. The sum of their reciprocals is $\dfrac{1}{3}$. Find the no.

Q20. The sum of a number and its reciprocal is $\dfrac{17}{4}$. Find the number.

Q21. Find the ratio of the sum one produce of the roots of $7x^2 - 12x + 18 = 0$

Q22. If α and β are the roots of the equation $x^2 + kx + 12 = 0$, such that $\alpha - \beta = 1$, then find K.

Q23. A two-digit number is such that the product of its digits is 18. When 63 is subtracted from the number the digit interchanges their places. Find the no.

Q24. Given that one root of the quadratic equation $ax^2 + bx + c = 0$ is three times the other, show that $3b^2 = 16ac$

Q25. The length of the hypotenuse of a right triangle exceeds the length of the base by 2 cm and exceeds twice the length of the altitude by 1cm. find the length of each side of the triangle.

Q26. A farmer wishes to grow a 100m² rectangular vegetable garden. Since he has with him only 30 m barbed wire, he fences three sides of the rectangular garden letting compound wall of his house act as the fourth side fence. Find the dimensions of his garden.

Q27. Some student planned a picnic. The budget for food was ₹500. But 5 of these failed to go and then cost of food for each member is increased by ₹5. How many students attended the picnic?

Q28. If I had walked 1 km per hr faster, I would have taken 10 minutes Less to walk 2km. Find the rate of my walking.

Q29. A takes 6 days less than the time taken by B to finish a piece of work. If both A and B together can finish it in 4 days, find the time taken by B to finish the work.

Q30. A plane left 30 mints later than the schedule time and in order to reach its destination 1500 Km away in time it has to increase its speed by 250km/hr from its usual speed. Find its usual speed.

Q31. A motor boat, whose speed is 15km/hr in still water, goes 30km downstream and comes back in a total time of 4hr 30 minutes. Find the speed of the stream.

Q32. Two circles touch internally. The sum of their areas is 116 πcm^2 and the distance between their centres is 6 cm. find the ratio of the circles.

Q33. A factory kept increasing its output by the same percent ago every year. Find the percentage if it is known that the output is doubled in the last two years.

Q34. Two pipes running together can fill a cistern in $\frac{40}{13}$ minute. If one pipe takes 3 minute more than the other to fill fit, find the time in which each pipe would fill the cistern.

Q35. In a cricket match Kapil took one wicket less than twice the number of wickets taken by Ravi. If the product of the no. of wickets taken by these two is 15, find the no. of wickets taken by each.