**Half mark and one-mark questions**

1. Check whether 1 and are the roots of the equation 2x² - 5x + 3 = 0?
2. If b² - 4ac > 0 in ax² + bx + c = 0, then what can you say about the roots of the equation?
3. Find the value of k, if 2 is one of the roots of the equation x² - kx + 6 = 0?
4. Write the nature of the roots of the quadratic equation 2x² - 5x + 6 = 0?
5. Find the sum and product of the roots of the quadratic equation x² - 4√3x + 9 = 0?
6. Find the roots of the equation x² + 2x – 3 = 0?
7. Find the discriminant of the quadratic equation 3x² - 5x + 2 = 0?
8. Find the value of k for quadratic equation 2x² + kx + 3 = 0, so that it has two equal roots?
9. If the roots of ax² + bx + c = 0 are equal in magnitude but opposite in sign, then find the ‘b’?
10. Which of the following is a quadratic equation?

A) (x – 1) (x + 1) = x² + 3x + 5

B) x² + 8x – 5 = x(x + 3)

C) 5x² - 7x + 8 = 5x(x + 1)

D) (x + 5)3 = x3 + 2x + 3

1. Draw a rough graph of ax² + bx + c = 0, if b² - 4ac < 0?
2. If the roots of ax² + bx + c = 0 are equal, then find the value of ‘c’?
3. If the equation x² - bx + 1 = 0, does not posses real roots then \_\_\_ ( )

A) -3 < b < 3 B) -2 < b< 2 C) b > 2 D) b < 4

1. If 2 is a root of x² + bx + 12 = 0 and another equation x² + bx + q = 0 has equal roots, then find the value of ‘q’?
2. Find the value of k if the sum and product of the roots of kx² + 6x + 4k =0 are equal?
3. A quadratic equation whose one root is 2 and the sum of the roots is zero is \_\_\_\_\_

A) x² + 4 = 0 B) x² - 4 = 0 C) 4x² - 1 = 0 D) x² - 2 = 0

1. If one root of the equation ax² + bx + c = 0 reciprocal to another root then find a : c ?
2. Represent the following situation in the form of a quadratic equation?

“The product of two consecutive odd numbers is 575”

1. Give an example to a quadratic equation having no real solutions?
2. Write a situation where we use quadratic function in our daily life?

**Two marks questions**

1. The sum of a number and its reciprocal is . Find the number?
2. Is it possible to design a rectangular garden whose length is twice of its breadth and area is 200 m²? If so, find length and breadth?
3. Write the quadratic equation whose roots are 2 + √3 and 2 - √3?
4. Sankar said that (x + 1)² = 2(x + 1) is a quadratic equation. Do you agree with him? Justify.
5. Rohan’s mother is 26 years older than him. The product of their ages after 3 years will be 360. Then write the required quadratic equation to find Rohan’s present age?
6. Find two numbers, whose sum is 27 and product is 182?
7. Find the discriminant of 2x² - 4x + 3 = 0 and discuss the nature of its roots?
8. Find the roots of the equation 2x² + x – 6 = 0 by factorization?
9. If sin A and cos A are the roots of the equation ax² + bx + c = 0, then find the value of b²?
10. If one root of the equation x² + ax + 3 = 0, then find the other root of the equation?
11. If x = 1 is a common root of the equations ax² + ax + 2 = 0 and x² + x + b = 0 then find the value of ‘ab’?
12. The altitude of a right triangle is 7cm less than its base. If the hypotenuse is 13cm, find the other two sides?
13. Find the roots of the equation x + = 3 (x ≠ 0) by using formula?
14. Explain how nature of roots of the equation ax² + bx + c = 0 depends on the value of discriminant b² - 4ac?
15. Check whether (x + 2)3 = x3 – 4 is quadratic equation?

**Four marks questions**

1. If the sum of the areas of two squares is 468m² and the difference of their perimeters is 24m, then find the measurements of their sides?
2. Sum of the squares of two consecutive positive even integers is 100. Find those numbers by using quadratic equations?
3. If -4 is a common root of the quadratic equations 2x² + px + 8 = 0 and p(x² + x) + k = 0, then find the value of ‘k’?
4. A train travels 360km at uniform speed. If the speed had been 5 kmph more, it would have taken 1 hour less for the same journey. Find the speed of the train?
5. In a class test, the sum of Shefali’s marks in Mathematics and English is 30. Had she got 2 marks more in Mathematics and 3 marks less in English, the product of her marks would have been 210. Find her marks in two subjects?
6. A motor boat whose speed is 24 kmph in still water takes 1 hr more to go 32 km upstream than to return downstream to the same spot. Find the speed of the stream?
7. Two pipes running together can fill a tank in minutes. If one pipe takes 5 minutes more than the other to fill the tank separately, find the time in which each pipe would fill he tank separately?
8. Solve the following for x:

= ; x ≠ 3, -3

1. The area of an isosceles triangle is 60 cm² and the length of each of its equal sides is 13 cm. Find its base?
2. Find the roots of the equation 5x² - 7x – 6 = 0 by the method of completing square?
3. The sum of the reciprocals of Rehaman’s ages 3 years ago and 5years from now is 1/3. Find his present age?
4. Prove that the roots of the quadratic equation ax² + bx + c = 0 are ?
5. Two trains leave a railway station at the same time. The first train travels towards west and the second train towards north. The first train travels 5 kmph faster than the second train. If after two hours they are 50 km apart find the average speed of each train?
6. Find the dimensions of a rectangle whose perimeter is 28 m and whose area is 40 square meters?
7. Find the nature of roots of the quadratic equation x² + 2x – 143 = 0. And verify your answer by finding the roots of the equation by factorization method?