

# Mathematics

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## (Chapter – 4) (Quadratic Equations) (Practice Test 2)

(Class X)

Time: 1 Hour 15 minutes

M. M: 25

### General Instructions:

1. This question paper contains four sections: A, B, C and D. Each part is compulsory.
2. Section A has 5 MCQ of one mark each.
3. Section B has 3 questions of two marks each.
4. Section C has 3 questions of three marks each.
5. Section D has 5 questions of five marks each, attempt any 1 out of 2.
6. There is no negative marking.

### [Section – A]

1. Find the consecutive odd positive integers, sum of whose squares is 290  
(A) 15, 17 (B) 9, 11 (C) 13, 15 (D) 11, 13
2. Which of the following are the roots of the quadratic equation,  $x^2 - 9x + 20 = 0$  by factorization?  
(A) 3, 4 (B) 4, 5 (C) 5, 6 (D) 6, 7
3. Reduction of rupee in the price of onion makes the possibility of buying one more kg of onion for Rs.56. Find the original price of onion per kg?  
(A) 7 (B) 1 (C) 7, -9 (D) 8
4. The equation  $(x - 2)^2 + 1 = 2x - 3$  is a  
(A) Linear equation (B) quadratic equation (C) cubic equation (D) bi – quadratic equation
5. Two candidates attempt to solve a quadratic equation of the form  $x^2 + px + q = 0$ . One starts with a wrong value of p and finds the roots to be 2 and 6. The other starts with a wrong value of q and finds the roots to be 2 and -9. Find the correct roots of the equation.  
(A) 3, 4 (B) -3, -4 (C) 3, -4 (D) -3, 4

### [Section – B]

6. Find the value of k for which the quadratic equation  $9x^2 - 3kx + k = 0$  has equal roots.
7. If -5 is a root of the quadratic equation  $2x^2 + px - 15 = 0$  and the quadratic equation  $p(x^2 + x) + k = 0$  has equal roots, then find the value of k.
8. Does there exist a quadratic equation whose co-efficient are rational but both of its root is irrational? Justify your answer.

### [Section – C]

9. Using quadratic formula solve the following quadratic equation:  
 $p^2x^2 + (p^2 - q^2)x - q^2 = 0$ .
10. Find the roots of the following equation:  
 $\frac{1}{x+3} - \frac{1}{x-6} = \frac{9}{20}; x \neq -3, 6$
11. Find the nature of the roots of the following quadratic equation. If the real roots exist, find them:  
(A)  $3x^2 - 4\sqrt{3}x + 4 = 0$  (B)  $2x^2 - 6x + 3 = 0$

### [Section – D]

12. Solve for x:  $\frac{x-4}{x-5} + \frac{x-6}{x-7} = \frac{10}{3}; x \neq 5, 7$
13. The sum of the reciprocal of Rahman's age (in years) 3 years ago and 5 years from now is  $\frac{1}{3}$ . Find his present age.

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Answers

## Section – A

1. 11, 13
2. 4, 5
3. 8
4. Quadratic equation
5. -3, -4

## Section – B

6.  $K = 4$
7.  $K = \frac{7}{4}$
8. Yes,  $x^2 - 4x + 1 = 0$  is a quadratic equation with rational co-efficient. Its roots are  $\frac{4 \pm \sqrt{(-4)^2 - 4 \times 1 \times 1}}{2} = \frac{4 \pm \sqrt{12}}{2} = 2 \pm \sqrt{3}$ , which are irrational.

## Section – C

9. roots are  $\frac{q^2}{p^2}$  and -1
10.  $x = 1$  and  $x = 2$
- 11.

(A) equal roots of given equation are  $\frac{2\sqrt{3}}{3}, \frac{2\sqrt{3}}{3}$

(B) roots of given equation are  $\frac{3+\sqrt{3}}{2}$  and  $\frac{3-\sqrt{3}}{2}$

## Section – D

12.  $x = \frac{11}{2}$  or  $x = 8$
13.  $x = 7$  or  $x = -3$

But  $x \neq -3$  (age cannot be negative) Therefore, present age of Rahman = 7 years

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