Mathematics

(Chapter – 4) (Quadratic Equations) (Practice Test 1)

(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. One year ago, a man was 8 times as old as his son. Now his age is equal to the square of his son's age. Their present ages are
   (A) 7 years , 49 years   (B) 5 years , 25 years   (C) 1 years , 50 years   (D) 6 years , 49 years

2. If -5 is a root of the quadratic equation $2x^2 + px - 15 = 0$, then
   (A) P = 3   (B) p = 5   (C) p = 7   (D) p = 1

3. The two consecutive odd positive integers, sum of whose squares is 290 are
   (A) 13 , 15   (B) 11 , 13   (C) 7 , 9   (D) 5 , 7

4. The value of $b^2 – 4ac$ for equation $3x^2 – 7x – 2 = 0$ is
   (A) 49   (B) 0   (C) 25   (D) 73

5. Value(s) of k for which the quadratic equation $2x^2 – kx = k = 0$ has equal roots is
   (A) 0   (B) 4   (C) 8   (D) 0 and 8

[Section – B]

6. State whether the equation $(x + 1) (x - 2) + x = 0$ has two distinct real roots or not. Justify your answer.
7. Is 0.3 a root of the equation $x^2 – 0.9 = 0$? Justify
8. For what value of k, is 3 a root of the equation $2x^2 + x + k = 0$?

[Section – C]

9. Find the roots of the following quadratic equation by factorization:

   (A) $\sqrt{2x^2} + 7x + 5 + 5\sqrt{2} = 0$

   (B) $2x^2 – x + \dfrac{1}{8} = 0$

10. Find the roots of the following quadratic equation, if they exist, by the method of completing the square:
    (A) $2x^2 + x – 4 = 0$
    (B) $4x^2 + 4\sqrt{3}x + 3 = 0$

11. Find the roots of the following quadratic equation by applying the quadratic formula.
    (A) $2x^2 - 7x + 3 = 0$
    (B) $4x^2 + 4\sqrt{3}x + 3 = 0$

[Section – D]

12. Using quadratic formula, solve the following equation for x:
    $abx^2 + (b^2 – ac) x – bc = 0$

13. Find the value of p for which the quadratic equation $(2p + 1) x^2 - (7p + 2) x + (7p - 3) = 0$ has equal roots. Also find these roots.

Mathematics

Answers

Section – A

1. 7 years, 49 years
2. P = 7
3. 11, 13
4. 73
5. 0 and 8

Section - B

6. Given equation has two distinct real roots
7. Hence, 0.3 is not a root of given equation.
8. k = -21

Section – C

9.

(A) The roots are $-\dfrac{5}{\sqrt{2}}$ and $-\sqrt{2}$.

(B) the roots of given equation are $\dfrac{1}{4}$ and $\dfrac{1}{4}$

10.

(A) Roots of given equation are $\dfrac{\sqrt{33}-1}{4}$ and $\dfrac{-\sqrt{33}+1}{4}$.

(B) Roots of given equation are $-\dfrac{\sqrt{3}}{2}$ and $-\dfrac{\sqrt{3}}{2}$.

11.

(A) The roots of given equation are 3 and $\dfrac{1}{2}$.

(B) The roots of given equation are $\dfrac{-\sqrt{3}}{2}$ and $\dfrac{-\sqrt{3}}{2}$.

Section – D

12. $x = \dfrac{-C}{b}$

13. $p = -\dfrac{4}{7}$ or p = 4   And their roots are: $x = \dfrac{5}{3}, \dfrac{5}{3}$