

Chapter 4 Quadratic Equations

UNIT TEST

Duration: 1 hour

Marks: 30

SECTION A

Each carry 1 mark

1. Roots of the quadratic equation $4x^2 - 4px + (p^2 - q^2) = 0$ are

- a) $\frac{p \pm q}{2}$ b) $\frac{p \pm q}{3}$ c) $\frac{q \pm p}{5}$ d) $\frac{p \pm q}{8}$

2. Roots of the equation $(x - 1)^2 - 5(x - 1) - 6 = 0$ are:

- a) (7, 0) b) (6, 0) c) (7, 6) d) (6, -7)

3. If $\frac{1}{x-2} + \frac{2}{x-1} = \frac{6}{x}$ (where $x \neq 0, 1, 2$), then $x =$

- a) $3, \frac{2}{3}$ b) $5, \frac{7}{3}$ c) $3, \frac{4}{3}$ d) $7, \frac{5}{3}$

4. Assertion: $4x^2 - 12x + 9 = 0$ has repeated roots.

Reason: The quadratic equation $ax^2 + bx + c = 0$ have repeated roots if discriminant $D > 0$.

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).

(c) Assertion (A) is true but Reason (R) is false.

(d) Assertion (A) is false but Reason (R) is true.

SECTION B

Each carry 2 marks

5. Find the value of k for which the given quadratic equation has real and equal roots
 $x^2 + k(4x + k - 1) + 2 = 0$.

6. Divide 16 into two parts such that twice the square of the larger part exceeds the square of the smaller part by 164.

7. Solve: $x^2 - (1 + \sqrt{2})x + \sqrt{2} = 0$.

SECTION C

Each carry 3 marks

8. Solve for x: $\frac{x-1}{x-2} + \frac{x-3}{x-4} = 3\frac{1}{3} (x \neq 2, 4)$

9. The perimeter of a right-angled triangle is five times the length of its shortest side. The numerical value of the area of the triangle is 15 times the numerical value of the length of the shortest side. Find the length of the three sides of the triangle.

SECTION D

Each carry 5 marks

10. Some students arranged a picnic. The budget for food was ₹240. Because four students of the group failed to go, the cost of food to each student got increased by ₹5. How many students went for the picnic?

11. Seven years ago, Varun's age was five times the square of Swati's age. Three years hence Swati's age will be two fifths of Varun's age. Find their present ages.

SECTION E

12. Raghav has a field with total area 1260m^2 . He uses it to grow wheat and rice. The land used to grow wheat land is rectangular in shape while the rice land is in the shape of a square. The length of wheat land is 3 meters more than twice the length of rice land.

Answer the following questions

i) If the length of the rice land is x metre, find the total length of the field in metre. [1mark]

(Or)

Find the perimeter of the field. [1 mark]

ii) If the total area of the field is 1260 m^2 , find the value of x. [2 marks]

iii) Find the area of wheat land. [1 mark]

UNIT TEST

1. a) $\frac{p+q}{2}$

2. a) (7, 0)

3. c) $3, \frac{4}{3}$

4. (c) Assertion (A) is true but Reason (R) is false.

5. $k = -1$ or $\frac{2}{3}$

6. 10 and 6

7. $1, \sqrt{2}$

8. $5, \frac{5}{2}$

9. 16cm, 30 cm and 34cm.

10. 16

11. 9 years and 27 years

12. i) $3x + 3$ (Or) $8x + 6$ ii) 20 iii) 860m^2