MM 25 **Quadratic Equations** **Time 1h**

Section A 1 mark each

1. If is a root of equation $x^2 + kx - 3 = 0$ then k =
   (a) $-\frac{11}{2}$ (b) $\frac{11}{2}$ (c) $\frac{7}{2}$ (d) none of these

2. Quadratic formula was given was
   (a) Bramhagupta (b) Sridharacharya
   (c) Bhaskara (d) none of these

3. Values of *k* for which the quadratic equation $5x^2 - kx + k = 0$ has equal roots is
   (a) 0 only (b) 10 (c) 20 only (d) 0, 20

4. $(x^2 + 4)^2 - 16x^2$ has
   (a) one real root (b) two real roots
   (c) three real roots (d) four real roots

5. Which constant should be added and subtracted to solve the quadratic equation $4x^2 + \sqrt{3}x - 5 = 0$ by the method of completing the square?
   (a) $\frac{\sqrt{3}}{4}$ (b) $\frac{3}{4}$ (c) $\frac{3}{16}$ (d) none of these

Section B 2 marks each

6. Every quadratic equation has
   (a) at least one real root (b) at least two real roots
   (c) at most two real roots (d) exactly one real root

7. Does there exist a quadratic equation whose coefficients are rational but both of its roots are irrational? Justify your answer.

8. Solve for x, $\frac{1}{x+a+b} = \frac{1}{x} + \frac{1}{a} + \frac{1}{b}$

Section C 3 marks each

9. Solve $\frac{a}{x-b} + \frac{b}{x-a} = 2$, $x \neq a, b$

10. Find roots by method of completing the squares $2x^2 - 2x + 1 = 0$. Do we get any real roots? If no why?

Section D 4 marks each

11. At present Asha's age (in years) is 2 more than the square of her daughter Nisha's age. When Nisha grows to her mother's present age, Asha's age would be one year less than 10 times the present age of Nisha. Find the present ages of both Asha and Nisha

12. Out of a number of birds, one fourth the number are moving about in lotus plants; $\frac{1}{9}$th couples (along) with $\frac{1}{4}$th as well as 7 times the square root of the number move on a hill, 56 birds remain in vakula trees. What is the total no. of birds?

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