## BHARATH COACHING CENTRE

| 10th CBSE | Quadratic Equations | Total: 50 |
| Maths | SA - II | Time: 1.30 hrs |

### Section – A                                                                                              5 X 1 = 5

1. If the equation $x^2 + 4x + k = 0$ has real and distinct roots, then

2. The value of $\sqrt{6 + \sqrt{6 + \sqrt{6 + \cdots}}}$ is

3. If the sum of the roots of the equation $x^2 - x = \lambda(2x - 1)$ is zero, then $\lambda =$

4. If the sum and product of the roots of the equation $kx^2 + 6x + 4k = 0$ are equal, then $k =$

5. If the sum of the roots of the equation $x^2 - (k + 6)x + 2\ 2(2k - 1)=0$ is equal to half of their product, then $k =$

### Section – B                                                                                              5 X 2 = 10

6. Solve the Quadratic Equations by factorization: $\frac{2}{x^2} - \frac{5}{x} + 2 = 0$

7. Find the roots of the Quadratic Equations by the method of completing the square:
$x^2 - (\sqrt{2} + 1)x + \sqrt{2} = 0$

8. Write the discriminant of the Quadratic Equations: $\sqrt{3}x^2 + 2\sqrt{2}x - 2\sqrt{3} = 0$

9. Determine the set of values of k for which the given Quadratic Equations has real roots: $2x^2 + kx - 4 = 0$

10. The sum of the squares of two positive integers is 208. If the square of the larger number is 18 times the smaller number, find the numbers.

### Section – C                                                                                              5 X 3 = 15

11. Solve the Quadratic Equations by factorization: $\frac{1}{a + b + x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}$

12. If two pipes function simultaneously, a reservoir will be filled in twelve hours. First pipe fills the reservoir 10 hours faster than the second pipe. How many hours will the second pipe take to fill the reservoir?

13. If roots of a Quadratic Equations $(b - c)x^2 + (c - a)x + (a - b) = 0$ are real and equal, then prove that 2b = a + c.

14. Find the roots of the equation $2x^2 + x + 4 = 0$ by the method of completing the square.

15. Using Quadratic formula solve the following Quadratic equations: $p^2x^2 + (p^2 - q^2)x - q^2 = 0$

### Section – D                                                                                              5 X 4 = 20

16. A train takes 3 hours less than a bus for a journey of 600 km. if the speed of the bus is 10 km/hour less than of the train, find the speeds of the bus and the train.

17. Rs 6500 is divided equally among a certain number of persons. Had there been 15 more persons, each would have got Rs 30 less. Find the original number of persons.

18. A motor boat whose speed is 18 km/hour in still water takes 1 hour more to go 24 km upstream than to return downstream to the same spot. Find the speed of the stream.

19. The roots of the Quadratic equation $(a^2 + b^2)x^2 - 2(ac + bd)x + (c^2 + d^2) = 0$ are equal. Prove than $\frac{a}{b} = \frac{c}{d}$.

20. In a flight of 600 km, an aircraft was slowed down due to bad weather. The average speed for the trip was decreased by 200 km/h and the time of flight increases by 30 minutes. Find the duration of flight.