10th MATHS – QUARDRATIC EQUATIONS
MODEL -1   Total Marks -30

VERY SHORT ANSWER TYPE QUESTIONS   **Marks – 5 x 2 = 10**

Q1. Show that x = -3 is the solution of the equation $x^2 +6x +9 = 0$.

Q2. For what value of k are the roots of quadratic equation $3x^2 +2kx +27 = 0$ real and equal?

Q3. Write the nature of roots of quadratic equation $4x^2 +4\sqrt{3}x +3 = 0$.

Q4. If a and b are the roots of the equation $x^2 +ax –b = 0$, then find a and b.

Q5. If x = 3 is one root of the quadratic equation $x^2 – 2kx -6 = 0$, then find the value of k.

SHORT ANSWER TYPE QUESTIONS   **Marks – 4 x 3 =12**

Q6. Solve for x:
a) $x^2 -2(a^2 +b^2)x + (a^2 –b^2)^2 = 0$
b) $2x^2 +ax –a^2 = 0$
c) $p^2x^2 +(p^2 – q^2)x –q^2 = 0$
d) $\sqrt{2}x^2 +7x +5\sqrt{2} = 0$
e) $(a +b)^2x^2 +8(a^2 – b^2)x +16(a – b)^2 = 0$
f) $1/(a +b +x) = 1/a + 1/b + 1/x$, $a\neq 0$, $b\neq 0$, $x\neq 0$.

Q7. If $ad \neq bc$, then prove that the equation $(a^2 +b^2)x^2 +2(ac +bd)x +(c^2 +d^2) = 0$ has no real roots.

Q8. If one root of the equation $3x^2 –kx -2 = 0$ is 2, find the value of k. Also find the other root.

Q9. 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, find the value of k.

LONG ANSWER TYPE QUESTIONS   **Marks – 2 x 4 =8**

Q10. A train travels at a certain average speed for a distance of 63km and then travels at a distance of 72km at an average speed of 6km/hr more than its original speed. If it takes 3 hours to complete total journey, what is the original average speed?

Q11. An aeroplane left 30 minutes later than its scheduled time and in order to reach its destination 1500km away in time, it has to increase its speed by 250 km/hr from its usual speed, determine its usual speed.