QUADRATIC EQUATION

Q.1) The values of x satisfying the equation is $\frac{x-1}{x-2}+\frac{x-3}{x-4}=3\frac{1}{3};\ x\neq 2,4$

(A) $3,\frac{3}{2}$ (B) $5,\frac{5}{2}$

(C) $7,\frac{7}{2}$ (D) $9,\frac{9}{2}$

Q.2) Which of the following equations has imaginary roots :

(A) $x^2 - 4x + 2 = 0$ (B) $3x^2 + 2x - 1 = 0$

(C) $x^2 - 4x + 2 = 0$ (D) $x^2 + x + 1 = 0$

Q.3) If –4 is a root of the quadratic equation $x^2 + px - 4 = 0$ and the quadratic equation $x^2 + px + k = 0$ has equal roots, the value of k is

(A) $\frac{3}{4}$ (B) $\frac{5}{4}$

(C) $\frac{7}{4}$ (D) $\frac{9}{4}$

Q.4) The values of k for which the equation $x^2 - 4x + k = 0$ has distinct real roots is

(A) $k < 4$ (B) $k > 4$

(C) $k = 4$ (D) k is undefined

Q.5) A two digit number is four times the sum and three times the product of its digits. The number is

(A) 22 (B) 23

(C) 24 (D) 25

Q.6) The quadratic equation whose roots are twice the roots of $2x^2 - 5x + 2 = 0$ is

(A) $8x^2 - 10x + 2 = 0$ (B) $x^2 - 5x + 4 = 0$

(C) $2x^2 - 5x + 2 = 0$ (D) $x^2 - 10x + 6 = 0$

Q.7) If $c \neq 0$ and the equation $\frac{p}{2x}=\frac{a}{x+c}+\frac{b}{x-c}$ has two equal roots, then p can be

(A) $\left(\sqrt{a}-\sqrt{b}\right)^2$ (B) $\left(\sqrt{a}+\sqrt{b}\right)^2$

(C) a + b (D) a – b

Q.8) Out of a group of swans, 7/2 times the square root of the total number of swans are on the bank of a pond. Two swans are in the water. The total number of swans is?

(A) 16 (B) 17

(C) 18 (D) 19

Q.9) If $x=\sqrt{1+\sqrt{1+\sqrt{1+.....\infty}}}$, then x is equal to

(A) $\frac{1+\sqrt{5}}{2}$ (B) $\frac{1-\sqrt{5}}{2}$

(C) $\frac{1\pm\sqrt{5}}{2}$ (D) $\frac{1\pm\sqrt{3}}{2}$

Q.10) If one root of $5x^2 + 13x + k = 0$ is reciprocal of the other then k =

(A) 0 (B) 5

(C) $\frac{1}{6}$ (D) 6

Q.11) If one of the roots of the quadratic equation is $2+\sqrt{3}$ then find the quadratic equation.

(A) $x^2 - (2+\sqrt{3})x + 1 = 0$

(B) $x^2 + (2+\sqrt{3})x + 1 = 0$

(C) $x^2 - 4x + 1 = 0$

(D) $x^2 + 4x - 1 = 0$

Q.12) Two candidates attempt to solve a quadratic equation of the form $x^2 + px + q = 0$. One starts with a wrong value of p and finds the roots to be 2 and 6. The other starts with a wrong value of q and finds the roots to be 2 and – 9. Find the correct roots of the equation:

(A) 3, 4 (B) – 3, – 4

(C) 3, – 4 (D) – 3, 4

Q.13) Determine k such that the quadratic equation $x^2 + 7(3 + 2k) - 2x(1 + 3k) = 0$ has equal roots :

(A) 2, 7 (B) 7, 5

(C) $2, -\frac{10}{9}$ (D) None of these

Q.14) The equation $x^2 - px + q = 0$ $p, q \in R$ has no real roots if :

(A) $p^2 > 4q$ (B) $p^2 < 4q$

(C) $p^2 = 4q$ (D) None of these

Q.15) Find the value of k such that the sum of the square of the roots of the quadratic equation $x^2 - 8x + k = 0$ is 40 :

(A) 12 (B) 2

(C) 5 (D) 8

Q.16) Find the value of p for which the quadratic equation $x^2 + p(4x + p - 1) + 2 = 0$ has equal roots :

(A) $-1, \frac{2}{3}$ (B) 3, 5

(C) $1, -\frac{4}{3}$ (D) $\frac{4}{3}, 2$

Q.17) The length of a hypotenuse of a right triangle exceeds the length of its base by 2 cm and exceeds twice the length of the altitude by 1 cm. Find the length of each side of the triangle (in cm) :

(A) 6, 8 10 (B) 7, 24, 25

(C) 8, 15, 17 (D) 7, 40, 41

Q.18) A plane left 40 minutes late due to bad weather and in order to reach it's destination, 1600 km away in time, it had to increase it's speed by 400 km/h from it's usual speed. Find the usual speed of the plane:

(A) 600 km/h (B) 750 km/h

(C) 800 km/h (D) None of these

Q.19) The real values of a for which the quadratic equation $2x^2 - (a^3 + 8a - 1)x + a^2 - 4a = 0$ possesses roots of opposite signs are given by :

(A) $a > 6$ (B) $a > 9$

(C) $0 < a < 4$ (D) $a < 0$

Q.20) The integral values of k for which the equation $(k - 2)x^2 + 8x + k + 4 = 0$ has both the roots real, distinct and negative is :

(A) 0 (B) 2

(C) 3 (D) – 4

Q.21) If the roots of the equation $\frac{x^2 - bx}{ac - c} = \frac{m-1}{m+1}$ are equal and of oppositve sign, then the value of m will be :

(A) $\frac{a-b}{a+b}$ (B) $\frac{b-a}{a+b}$

(C) $\frac{a+b}{a-b}$ (D) $\frac{b+a}{b-a}$

Q.22) The values of k ($k > 0$) for which the equation $x^2 + kx + 64 =$ and $x^2 - 8x + k = 0$ both will have real roots is :

(A) 8 (B) 16

(C) – 64 (D) None of these

Q.23) Solve : $\sqrt{2x+9} - \sqrt{x-4} = 3$

(A) 4, 16 (B) z8, 20

(C) 2, 8 (D) None of these

Q.24) Solve x : $6\left[x^2 + \frac{1}{x^2}\right] - 25\left(x + \frac{1}{x}\right) + 12 = 0$:

(A) $-\frac{1}{3}, -\frac{1}{2}, 2, 3$ (B) $\frac{1}{3}, \frac{1}{2}, 2, 3$

(C) $\frac{1}{3},\frac{1}{2},-2,-3$ (D) None of these

Q.25) Solve for x : $3^{x+2}+3^{-x}=10$

(A) – 3, – 2 (B) – 2, 0

(C)2 , 3 (D) None of these

Q.26) The sum of all the real roots of the equation $|x-2|^2+|x-2|^2-2=0$ is :

(A) 2 (B) 3

(C) 4 (D) None of these

Q.27) If a, b ∈ {1, 2, 3, 4}, then the number of quadratic equation of the form ax2 + bx + 1 = 0, having real roots is :

(A) 6 (B) 7

(C) 8 (D) None of these

Q.28) The number of real solutions of $x-\frac{1}{x^2-4}=2-\frac{1}{x^2-4}$ is :

(A) 0 (B) 1

(C) 2 (D) Infinite

Q.29) The number of real roots of the equation $(x-1)^2+(x-2)^2+(x-3)^2=0$:

(A) 0 (B) 2

(C) 3 (D) 6

Q.30) If both the roots of the equation $x^2+mx+1=0$ and $(b-c)x^2+(c-a)x+(a-b)=0$ are common then :

(A) m = – 2 (B) m = – 1

(C) m = 0 (D) m = 1

Answer Sheet

Q.1	B	Q.11	C	Q.21	A
Q.2	D	Q.12	B	Q.22	B
Q.3	D	Q.13	C	Q.23	B
Q.4	A	Q.14	B	Q.24	A
Q.5	B	Q.15	A	Q.25	B
Q.6	B	Q.16	A	Q.26	C
Q.7	B	Q.17	C	Q.27	B
Q.8	A	Q.18	C	Q.28	A
Q.9	A	Q.19	C	Q.29	A
Q.10	B	Q.20	C	Q.30	A