DAY 3 ASSIGNMENT

Questions based on Roots of Quadratic Equation

Q.1 The roots of the equation $(x+2)^2 = 4(x+1) - 1$ are -

(A) ± 1 (B) $\pm i$
(C) 1,2 (D) – 1, –2

Q.2 The roots of Quadratic equation $x^2 + 14x + 45 = 0$ are -

(A) – 9,5 (B) 5, 9
(C) – 5, 9 (D) – 5, – 9

Q.3 The roots of the equation $x^4 - 8x^2 - 9 = 0$ are-

(A) $\pm 3, \pm 1$ (B) $\pm 3, \pm i$
(C) $\pm 2, \pm i$ (D) None of these

Q.4 Which of the following equations has 1 and – 2 as the roots -

(A) $x^2 - x - 2 = 0$ (B) $x^2 + x - 2 = 0$
(C) $x^2 - x + 2 = 0$ (D) $x^2 + x + 2 = 0$

Q.5 Roots of $3^x + 3^{-x} = 10/3$ are-

(A) 0, 1 (B) 1, – 1
(C) 0, – 1 (D) None of these

Q.6 If $f(x) = 2x^3 + mx^2 - 13x + n$ and 2 and 3 are roots of the equations $f(x) = 0$, then values of m and n are -

(A) 5,30 (B) – 5, 30
(C) – 5, – 30 (D) 5, – 30

Q.7 The number of roots of the quadratic equation $8\sec^2\theta - 6\sec\theta + 1 = 0$ is -

(A) Infinite (B) 1
(C) 2 (D) 0

Questions based on Nature of roots

Q.8 If roots of the equation $ax^2 + 2(a+b)x + (a+2b+c) = 0$ are imaginary, then roots of the equation $ax^2 + 2bx + c = 0$ are -

(A) rational (B) irrational
(C) equal (D) complex

Q.9 If a and b are the odd integers, then the roots of the equation $2ax^2 + (2a + b)x + b = 0$, $a \neq 0$, will be-

(A) rational (B) irrational
(C) non-real (D) equal

Q.10 If the roots of the equation $6x^2 - 7x + k = 0$ are rational then k is equal to -

(A) – 1 (B) –1,–2
(C) – 2 (4) 1,2

Q.11 The roots of the equation $(a^2 + b^2)x^2 - 2(bc + ad)x + (c^2 + d^2) = 0$ are equal, if -

(A) ab = cd (B) ac = bd
(C) ad+ bc = 0 (4) None of these

Q.12 For what value of m, the roots of the equation $x^2 - x + m = 0$ are not real-

(A) $\left]\frac{1}{4}, \infty\right[$ (B) $\left]-\infty, \frac{1}{4}\right[$
(C) $\left]-\frac{1}{4}, \frac{1}{4}\right[$ (4) None of these

Q.13 Roots of the equation $(a + b - c)x^2 - 2ax + (a - b + c) = 0$, $(a,b,c \in Q)$ are -

(A) rational (B) irrational
(C) complex (D) none of these

Q.14 The roots of the equation $x^2 - x - 3 = 0$ are-

(A) Imaginary (B) Rational
(C) Irrational (D) None of these

Q.15 The roots of the equation $x^2 + 2\sqrt{3}x + 3 = 0$ are-

(A) Real and equal
(B) Rational and equal
(C) Irrational and equal
(D) Irrational and unequal

Q.16 If the roots of the equation $ax^2 + x + b = 0$ be real, then the roots of the equation $x^2 - 4\sqrt{ab}x + 1 = 0$ will be -

(A) Rational (B) Irrational
(C) Real (D) Imaginary

Q.17 If one root of equation $x^2 + px + 12 = 0$ is 4, while the equation $x^2 + px + q = 0$ has equal roots then the value of q is -

(A) 49/4 (B) 4/49
(C) 4 (D) None of these

Q.18 If roots of the equation $(a-b)x^2 + (c-a)x + (b-c) = 0$ are equal, then a,b,c are in -

(A) A.P. (B) H.P.
(C) G.P. (D) None of these

Q.19 If the roots of $x^2 - 4x - \log_2 a = 0$ are real, then-

(A) $a \geq \frac{1}{4}$ (B) $a \geq \frac{1}{8}$

(C) $a \geq \frac{1}{16}$ (D) None of these

Q.20 If the roots of both the equations $px^2 + 2qx + r = 0$ and $qx^2 - 2\sqrt{pr}x + q = 0$ are real, then -

(A) $p = q$, $r \neq 0$ (B) $2q = \pm\sqrt{pq}$

(C) $p/q = q/r$ (D) None of these

Q.21 The roots of the equation $(p - 2)x^2 + 2(p - 2)x + 2 = 0$ are not real when -

(A) $p \in [1, 2]$ (B) $p \in [2, 3]$

(C) $p \in (2,4)$ (D) $p \in [3, 4]$

Q.22 If the roots of the equation $x^2 - 10x + 21 = m$ are equal then m is -

(A) 4 (B) 25

(C) – 4 (D) 0

Questions based on Sum and Product of roots

Q.23 For what value of a, the difference of roots of the equation $(a-2)x^2 - (a-4)x - 2 = 0$ is equal to 3 -

(A) 3, 3/2 (B) 3,1

(C) 1, 3/2 (D) None of these

Q.24 If α, β are roots of the equation $x^2 + px - q = 0$ and γ , δ are roots of $x^2 + px + r = 0$, then the value of $(\alpha - \gamma)(\alpha - \delta)$ is-

(A) p + r (B) p – r

(C) q – r (D) q + r

Q.25 If α , β are roots of the equation $2x^2 - 35x + 2 = 0$, then the value of $(2\alpha - 35)^3 . (2\beta - 35)^3$ is equal to -

(A) 1 (B) 8

(C) 64 (D) None of these

Q.26 If α , β are roots of the equation $px^2 + qx - r = 0$, then the value of $\frac{\alpha}{\beta^2} + \frac{\beta}{\alpha^2}$ is equal to -

(A) $-\frac{p}{qr^2}(3pr + q^2)$ (B) $-\frac{q}{pr^2}(3pr + q^2)$

(C) $-\frac{q}{pr^2}(3pr - q^2)$ (D) $\frac{q}{pr^2}(3pr + q)$

Q.27 If product of roots of the equation $mx^2 + 6x + (2m - 1) = 0$ is – 1, then m equals -

(A) – 1 (B) 1

(C) 1/3 (D) – 1/3

Q.28 For what value of a the sum of roots of the eqn. $x^2 + 2(2 - a - a^2)x - a^2 = 0$ is zero -

(A) 1,2 (B) 1, – 2

(C) – 1, 2 (D) – 1, – 2

Q.29 The difference between the roots of the equation $x^2 - 7x - 9 = 0$ is -

(A) 7 (B) $\sqrt{85}$

(C) 9 (D) $2\sqrt{85}$

Q.30 The HM of the roots of the equation $x^2 - 8x + 4 = 0$ is -

(A) 1 (B) 2

(C) 3 (D) None of these

Q.31 If the sum of the roots of the equation $ax^2 + 4x + c = 0$ is half of their difference, then the value of ac is-

(A) 4 (B) 8

(C) 12 (D) – 12

Q.32 If the sum of the roots of the equation $(a+1)x^2 + (2a + 3)x + (3a + 4) = 0$ is –1, then the product of the roots is -

(A) 0 (B) 1

(C) 2 (D) 3

Q.33 Sum of roots is – 1 and sum of their reciprocals is $\frac{1}{6}$, then equation is -

(A) $x^2 + x - 6 = 0$ (B) $x^2 - x + 6 = 0$

(C) $6x^2 + x + 1 = 0$ (D) $x^2 - 6x + 1 = 0$

Q.34 If α, β are roots of the equation $2x^2 - 5x + 3 = 0$, then $\alpha^2\beta + \beta^2\alpha$ is equal to -

(A) 15/2 (B) – 15/4
(C) 15/4 (D) – 15/2

Q.35 If α, β be the roots of the equation $p(x^2 + n^2) + pnx + qn^2x^2 = 0$ then the value of $p(\alpha^2 + \beta^2) + p\alpha\beta + q\alpha^2\beta^2$ is -

(A) $\alpha + \beta$ (B) 0
(C) p + q (D) $\alpha + \beta + p + q$

Q.36 If α and β are roots of $ax^2 - bx + c = 0$, then $(\alpha + 1)(\beta + 1)$ is equal to -

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

Q.37 If difference of roots of the equation $x^2 - px + q = 0$ is 1, then $p^2 + 4q^2$ equals-

(A) 2q + 3 (B) $(1 - 2q)^2$
(C) $(1 + 2q)^2$ (D) 2q – 3

Q.38 If α and β are the roots of the equation $x^2 + (\sqrt{\alpha})x + \beta = 0$ then the values of α and β are -

(A) $\alpha = 1, \beta = -2$ (B) $\alpha = 2, \beta = -2$
(C) $\alpha = 1, \beta = -1$ (D) $\alpha = -1, \beta = 1$

Q.39 If roots α and β of the equation $x^2 + px + q = 0$ are such that $3\alpha + 4\beta = 7$ and $5\alpha - \beta = 4$, then (p,q) is equal to -

(A) (1, 1) (B) (– 1, 1)
(C) (– 2, 1) (D) (2,1)

Q.40 If one root of the equation $x^2 - 30x + p = 0$ is square of the other, then p is equal to-

(A) 125, 216 (B) 125, – 216
(C) Only 125 (D) Only – 216

Q.41 If α, β are roots of the equation $x^2 - mx + n = 0$, then value of $(1 + \alpha + \alpha^2)(1 + \beta + \beta^2)$ is -

(A) $1 + (m+n) + (m^2 - mn + n^2)$
(B) $1 + (m + n) + (m^2 + mn + n^2)$
(C) $1 - (m - n) + (m^2 + mn + n^2)$
(D) None of these

Q.42 If the equation $\frac{a}{x-a} + \frac{b}{x-b} = 1$ has roots equal in magnitude but opposite in sign, then the value of a + b is -

(A) – 1 (B) 0
(C) 1 (D) None of these

Q.43 If α and β are the root of $ax^2 + bx + c = 0$, then the value of $\left\{\frac{1}{a\alpha+b} + \frac{1}{a\beta+b}\right\}$ is -

(A) $\frac{a}{bc}$ (B) $\frac{b}{ca}$
(C) $\frac{c}{ab}$ (D) None of these

Q.44 If roots of the equations $2x^2 - 3x + 5 = 0$ and $ax^2 + bx + 2 = 0$ are reciprocals of the roots of the other then (a,b) equals -

(A) (– 5, 3) (B) (5, 3)
(C) (5, – 3) (D) (–5,– 3)

Q.45 If the sum of the roots of $ax^2 + bx + c = 0$ be equal to sum of the squares, then -

(A) $2ac = ab + b^2$ (B) $2ab = bc + c^2$
(C) $2bc = ac + c^2$ (D) None of these

Q.46 If one root of $ax^2 + bx + c = 0$ be square of the other, then the value of $b^3 + ac^2 + a^2c$ is-

(A) 3 abc (B) – 3abc
(C) 0 (D) None of these

Questions based on Formation of Quadratic. Equation with given roots

Q.47 The quadratic equation with one root 2i is-

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

Q.48 The sum of the roots of a equation is 2 and sum of their cubes is 98, then the equation is -

(A) $x^2 + 2x + 15 = 0$
(B) $x^2 + 15x + 2 = 0$
(C) $2x^2 - 2x + 15 = 0$
(D) $x^2 - 2x - 15 = 0$

Q.49 If α and β are roots of $2x^2 - 3x - 6 = 0$, then the equation whose roots are $\alpha^2 + 2$ and $\beta^2 + 2$ will be -

(A) $4x^2 + 49x - 118 = 0$
(B) $4x^2 - 49x - 118 = 0$
(C) $4x^2 - 49x + 118 = 0$
(D) $4x^2 + 49x + 118 = 0$

Q.50 If α and β are roots of $2x^2 - 7x + 6 = 0$, then the quadratic equation whose roots are $-\frac{2}{\alpha}, -\frac{2}{\beta}$ is-

(A) $3x^2 + 7x + 4 = 0$
(B) $3x^2 - 7x + 4 = 0$
(C) $6x^2 + 7x + 2 = 0$
(D) $6x^2 - 7x + 2 = 0$

Q.51 If roots of quadratic equation $ax^2 + bx + c = 0$ are α and β then symmetric expression of its roots is -

(A) $\frac{\alpha}{\beta}+\frac{\beta^2}{\alpha}$ (B) $\alpha^2\beta^{-2} + \alpha^{-2}\beta^2$ (C) $\alpha^2\beta + 2\alpha\beta^2$ (D) $\left(\alpha+\frac{1}{\alpha}\right)\left(\beta+\frac{1}{\alpha}\right)$

Q.52 The quadratic equation with one root $\frac{1}{2}\left(1+\sqrt{-3}\right)$ is-

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

Q.53 The quadratic equation with one root $\frac{1}{1+i}$ is-

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

Q.54 If α and β are roots of $x^2 - 2x + 3 = 0$, then the equation whose roots are $\frac{\alpha-1}{\alpha+1}$ and $\frac{\beta-1}{\beta+1}$ will be -

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

Q.55 If α and β be the roots of the equation

$2x^2 + 2(a+b)x + a^2 + b^2 = 0$, then the equation whose roots are $(\alpha+\beta)^2$ and $(\alpha-\beta)^2$ is-

(A) $x^2 - 2abx - (a^2 - b^2)^2 = 0$ (B) $x^2 - 4abx - (a^2 - b^2)^2 = 0$
(C) $x^2 - 4abx + (a^2 - b^2)^2 = 0$ (D) None of these

Q.56 If $\alpha \neq \beta$ but $\alpha^2 = 5\alpha - 3$, $\beta^2 = 5\beta - 3$, then the equation whose roots are α/β and β/α is-

(A) $x^2 - 5x - 3 = 0$
(B) $3x^2 + 12x + 3 = 0$
(C) $3x^2 - 19x + 3 = 0$
(D) None of these

Ques.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Ans.	B	D	B	B	B	B	D	D	A	D	B	A	A	C	C	D
Ques.	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**
Ans.	C	C	A	D	C	B	C	B	B	A	D	C	A	C	B	C
Ques.	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**	**51**	**52**	**53**	**54**	**55**	**56**
Ans.	D	B	B	C	A	A	A	D	C	A	B	D	B	A	B	C