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☆ Multiple Choice Questions, with **only** one correct option.

- Q01. The quadratic polynomials with the sum and the products of its zeroes as $\frac{1}{4}$ and -1 respectively, is:
- (a) $4x^2 + x + 1$ (b) $4x^2 + x + 4$ (c) $4x^2 + x - 1$ (d) $4x^2 - x - 4$
- Q02. If $x^2 + \frac{1}{x^2} = 102$, then the value of $x - \frac{1}{x}$ is:
- (a) 8 (b) 10 (c) 12 (d) 13
- Q03. If $p(x) = 3x^3 + x^2 + 2x + 5$ is divided by $g(x) = x^2 + 2x + 1$, then the remainder will be:
- (a) $8x + 10$ (b) $9x + 10$ (c) $10x + 10$ (d) $11x + 10$
- Q04. The quadratic polynomial, the sum and product of whose zeroes are -3 and 2 respectively, is:
- (a) $x^2 + 3x + 2$ (b) $x^2 - 3x + 2$ (c) $x^2 + 3x - 2$ (d) $-x^2 + 3x + 2$
- Q05. The zeroes of quadratic polynomial $t^2 - 15$ are:
- (a) $-\sqrt{15}, \sqrt{15}$ (b) $\sqrt{15}, \sqrt{12}$ (c) $\sqrt{15}, -\sqrt{12}$ (d) $\sqrt{15}, -15$
- Q06. A quadratic polynomials, the sum and product of whose zeroes are $-\frac{1}{4}$ and $\frac{1}{4}$ respectively, is:
- (a) $4x^2 + x + 1$ (b) $x^2 - 3x + 2$ (c) $x^2 + 3x - 2$ (d) None of these
- Q07. If $\left(x + \frac{1}{x}\right) = 3$, then $x^2 + \frac{1}{x^2}$ is equal to:
- (a) $\frac{82}{9}$ (b) $\frac{10}{3}$ (c) 7 (d) 11
- Q08. If $x^{1/3} + y^{1/3} + z^{1/3} = 0$, then:
- (a) $x + y + z = 0$ (b) $x + y + z = 3xyz$



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- (c) $(x + y + z)^3 = 27xyz$ (d) $x^3 + y^3 + z^3 = 0$
- Q09. If $p(x) = 3x^2 - 5x$, then $p(2) =$ _____:
 (a) 2 (b) 3 (c) 0 (d) None of these
- Q10. The quadratic polynomials whose zeroes are $\frac{3}{5}$ and $-\frac{1}{2}$, is:
 (a) $10x^2 - x - 3$ (b) $10x^2 + x - 3$ (c) $10x^2 - x + 3$ (d) None of these
- Q11. If α and β are the zeroes of $2x^2 + 5x - 10$, then the value of $\alpha\beta$ is:
 (a) $-\frac{5}{2}$ (b) 5 (c) -5 (d) $\frac{2}{5}$
- Q12. A real number α is a zero of the polynomial $f(x)$ if:
 (a) $f(\alpha) > 0$ (b) $f(\alpha) < 0$ (c) $f(\alpha) = 0$ (d) $f(\alpha) \geq 0$
- Q13. The zeroes of a polynomial $f(x)$ are the coordinates of the points where the graph of $y = f(x)$ intersects:
 (a) X-axis (b) Y-axis (c) Origin (d) None
- Q14. If β is a zero of $f(x)$ then, _____ is one of the factors of $f(x)$.
 (a) $(x - 2\beta)$ (b) $(x - \beta)$ (c) $(x + \beta)$ (d) $(2x - \beta)$
- Q15. If $(y - a)$ is factor of $f(y)$ then, _____ is a zero of $f(y)$.
 (a) y (b) $-a$ (c) $2y$ (d) a
- Q16. Out of the followings, the incorrect statement for a quadratic polynomial is:
 (a) no real zeroes (b) two equal real zeroes
 (c) two distinct zeroes (d) three real zeroes
- Q17. A cubic polynomial $x = f(y)$ cuts Y-axis at atmost:
 (a) one point (b) two points (c) three points (d) four points
- Q18. Graph of $ax^2 + bx + c$ intersects X-axis at two distinct points if:
 (a) $b^2 - 4ac \leq 0$ (b) $b^2 - 4ac < 0$ (c) $b^2 - 4ac > 0$ (d) $b^2 - 4ac \geq 0$
- Q19. Polynomial $f(x) = x^2 + 1$ has _____ zeroes.
 (a) only one real (b) no real
 (c) only two real (d) one real and one non-real
- Q20. If P is the sum of zeroes and S is product then, the corresponding quadratic polynomial may be:
 (a) $x^2 - Sx + P$ (b) $x^2 - Sx - P$
 (c) $x^2 - Px + S$ (d) $x^2 + Sx - P$
- Q21. If zeroes of the quadratic polynomial $ax^2 + bx + c$ are reciprocal of each other, then:
 (a) $a = c$ (b) $a = b$ (c) $b = c$ (d) $a + c = 0$

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- Q22. If the sum of the zeroes of quadratic polynomial $3x^2 - kx + 6$ is 3, the value of k is:
 (a) 3 (b) -3 (c) 6 (d) None of these
- Q23. The other two zeroes of $x^3 - 8x^2 + 19x - 12$ if one of its zero is unity, is:
 (a) -3, 4 (b) -3, -4 (c) 3, -4 (d) None of these
- Q24. Quadratic polynomial, the sum and product of whose zeroes are -3 and 2 respectively, is:
 (a) $x^2 - 3x + 2$ (b) $x^2 + 3x - 2$ (c) $-x^2 + 3x + 2$ (d) $x^2 + 3x + 2$
- Q25. The third zero of the polynomial $x^3 + 7x^2 - 2x - 14$, if two of its zeroes are $\pm\sqrt{2}$, is:
 (a) 7 (b) -7 (c) 14 (d) -14
- Q26. If $\sqrt{\frac{5}{3}}$ and $-\sqrt{\frac{5}{3}}$ are two zeroes of $3x^4 + 6x^3 - 2x^2 - 10x - 5$, then its other two zeroes are:
 (a) -1, -1 (b) 1, -1 (c) 1, 1 (d) 3, -3
- Q27. If $\sqrt{3}$ and $-\sqrt{3}$ are two zeroes of $x^4 - 3x^3 - x^2 + 9x - 6$, then its other two zeroes are:
 (a) -1, -2 (b) 1, 2 (c) -1, 2 (d) None of these
- Q28. If $a - b$, a and $a + b$ are zeroes of the polynomial $x^3 - 3x^2 + x + 1$ then, the value of $a + b$ is:
 (a) $1 \pm \sqrt{2}$ (b) $-1 + \sqrt{2}$ (c) $-1 - \sqrt{2}$ (d) $-1 + \sqrt{3}$
- Q29. If a real number 'a' is zero of the polynomial $f(x)$, then:
 (a) $f(a) = -1$ (b) $f(a) = \pm 1$ (c) $f(a) = 0$ (d) $f(a) = 1$
- Q30. If the product of two of the zeroes of polynomial $2x^3 - 9x^2 + 13x - 6$ is 2, the third zero of the polynomial is:
 (a) -1 (b) -2 (c) $\frac{3}{2}$ (d) $-\frac{3}{2}$
- Q31. If -4 is a zero of the polynomial $x^2 - x - (2 + 2k)$ then, the value of k is:
 (a) 3 (b) 9 (c) 6 (d) -9
- Q32. If one zero of $(k^2 + 4)x^2 + 13x + 4k$ is reciprocal of the other, then k is:
 (a) 2 (b) -2 (c) 1 (d) -1
- Q33. If the sum of the zeroes of polynomial $p(x) = 2x^3 - 3kx^2 + 4x - 5$ is 6 then, the value of k is:
 (a) 2 (b) 4 (c) -2 (d) -4
- Q34. If one of the zero of $p(x) = 5x^2 + 13x - m$ is reciprocal of the other then, value of m is:
 (a) 2 (b) 4 (c) -2 (d) None of these
- Q35. For the polynomial $x^4 - x^3 + 2x^2 - 5x + 8$, the maximum number of zeroes it has are:
 (a) 2 (b) 4 (c) 3 (d) 0
- Q36. For the polynomial $2x^2 - 5x + 4$, the maximum number of zeroes (real or imaginary) it has are:
 (a) 2 (b) 4 (c) 3 (d) None of these

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- Q37. What is the difference between the values of the polynomial $7x - 3x^2 + 7$ at $x=1$ and $x=2$?
- (a) -2 (b) +2 (c) 3 (d) None of these
- Q38. What is the remainder when the polynomial $3x^4 - 4x^3 - 3x - 1$ is divided by $x-1$?
- (a) 5 (b) -5 (c) 8 (d) 6
- Q39. The value of k , if $(x-1)$ is a factor of $4x^3 + 3x^2 - 4x + k$ is:
- (a) -3 (b) 3 (c) 2 (d) 5
- Q40. The product of $(3-2x)(3+2x)$ is:
- (a) $8-2x^2$ (b) $9-4x^2$ (c) $9-2x^2$ (d) $9-16x^2$
- Q41. The number of zeroes which a polynomial of degree n can have is:
- (a) at most n (b) exactly n (c) $n+1$ (d) Can't say
- Q42. $\left(7x - \frac{1}{9y}\right)\left(7x + \frac{1}{9y}\right)$ is equal to:
- (a) $\left(39x^2 - \frac{1}{81y^2}\right)$ (b) $\left(49x^2 - \frac{1}{81y^2}\right)$ (c) $\left(49x^2 - \frac{1}{18y^2}\right)$ (d) None of these
- Q43. The term that should be added to $4x^2 + 12xy$ to form a perfect square is:
- (a) $9y$ (b) $9xy$ (c) $9y^2$ (d) $4y^2$
- Q44. The sum of the zeroes of $ax^2 + bx + c$:
- (a) $\frac{c}{a}$ (b) $-\frac{b}{a}$ (c) $\frac{b}{c}$ (d) $-\frac{c}{a}$
- Q45. If zeroes of the polynomial $px^2 + qx + 3$ are reciprocal to each other, then:
- (a) $q = 3$ (b) $p = 3$ (c) $p - q = 0$ (d) $p + q = 0$
- Q46. If $x^4 + \frac{1}{x^4} = 322$, then $x - \frac{1}{x}$ is equal to:
- (a) 4 (b) 6 (c) 5 (d) 2
- Q47. If $(x-2)$ is a factor of $2x^3 - 6x^2 + 5x + k$, then the value of k is:
- (a) -2 (b) 10 (c) 15 (d) None of these
- Q48. If α, β, γ be the zeroes of the polynomials $p(x)$ such that $\alpha + \beta + \gamma = 3$, $\alpha\beta + \beta\gamma + \gamma\alpha = -10$ and $\alpha\beta\gamma = -24$ then, $p(x)$ is:
- (a) $x^3 + 3x^2 - 10x + 24$ (b) $x^3 + 3x^2 + 10x - 24$
(c) $x^3 - 3x^2 - 10x + 24$ (d) None of these
- Q49. If $t^2 - 4t + 4 = 0$, then the value of $\left(t^3 + \frac{1}{t^3}\right)$ is:
- (a) $\frac{8}{56}$ (b) $\frac{8}{65}$ (c) $\frac{56}{8}$ (d) None of these

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Q50. The factors of $x^4 + 4$ are:

- (a) $(x^2 + 2)(x^2 - 2)$ (b) $(x^2 + 2x + 2)(x^2 - 2x + 2)$
(c) $(x + 2)(x - 2)$ (d) Not possible

Q51. If $(x + 2)$ is a factor of $p(x) = 2x^2 + 3x + k$, then the value of k is:

- (a) 2 (b) -2 (c) -14 (d) 14

Q52. The remaining zeroes of $3x^4 - 6x^3 - 2x^2 - 10x - 5$, if two of its zeroes are given as $\pm\sqrt{\frac{5}{3}}$, are:

- (a) -2, -1 (b) 2, -1 (c) -1, +1 (d) None of these

Q53. If $(x - 4)$ is the HCF of $(x^2 - x - 12)$ and $(x^2 - mx - 8)$, then the value of m is:

- (a) 0 (b) 1 (c) 2 (d) 6

Q54. The LCM of $(x^2 + x - 6)$ and $4(4 - x^2)$ is:

- (a) $4(x + 3)(x + 2)(x - 2)$ (b) $-4(x + 3)(x + 2)(x - 2)$
(c) $-4(x - 3)(x - 2)(x - 2)$ (d) $4(x - 3)(x + 2)(x + 2)$

Q55. If $x - \frac{1}{x} = \frac{1}{2}$, then the value of $4\left(x^2 + \frac{1}{x^2}\right)$ is:

- (a) 2 (b) 5 (c) 8 (d) 9

Q56. If $x^{100} + 2x^{99} + k$ is divisible by $(x + 1)$, then the value of k is:

- (a) 1 (b) 2 (c) -3 (d) -2

Q57. If $x^4 + \frac{1}{x^4} = 4$ then, $x - \frac{1}{x}$ is equal to:

- (a) -1, 2 (b) -1, +1 (c) 8, -1 (d) None of these

Q58. The value of $x^2 + \frac{1}{x^2}$, when $x + \frac{1}{x} = 10$:

- (a) 96 (b) 97 (c) 98 (d) 102

Q59. A quadratic polynomial $f(x)$, is such that:

$$f(x) > 0, \text{ for } -3 < x < 2 \\ \leq 0, \text{ otherwise}$$

Which of the following can be the polynomial $f(x)$?

- (a) $-x^2 - x - 6$ (b) $-x^2 + x + 6$ (c) $-x^2 + x - 6$ (d) $-x^2 - x + 6$