POLYNOMIALS

A mathematician who is not also a poet will never be a complete mathematician.
In fact, pure mathematics is, in its way, the poetry of logical ideas!

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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) $x+y+z=3xyz$

(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) $a + c = 0$

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 $p(x) = 2x^3 - 3k x^2 + 4x - 5$ 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

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

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:

$f(x)>0$, for $-3<x<2$

≤ 0, 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) $-x^2-x+6$

ANSWERS KEY

Q01. d	Q02. b	Q03. b	Q04. a	Q05. a	Q06. a	Q07. c
Q08. c	Q09. a	Q10. a	Q11. c	Q12. c	Q13. a	Q14. b
Q15. d	Q16. d	Q17. c	Q18. c	Q19. b	Q20. c	Q21. a
Q22. d	Q23. d	Q24. d	Q25. b	Q26. a	Q27. b	Q28. a
Q29. c	Q30. c	Q31. b	Q32. a	Q33. b	Q34. d	Q35. b
Q36. a	Q37. a	Q38. b	Q39. a	Q40. b	Q41. b	Q42. b
Q43. c	Q44. b	Q45. b	Q46. a	Q47. a	Q48. c	Q49. d
Q50. b	Q51. b	Q52. d	Q53. c	Q54. a	Q55. d	Q56. a
Q57. d	Q58. c	Q59. d				

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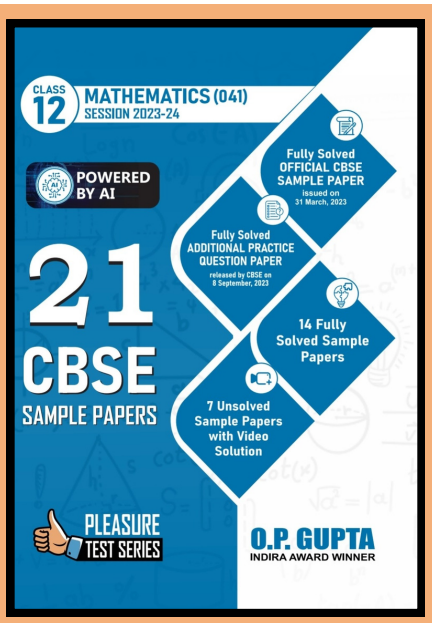

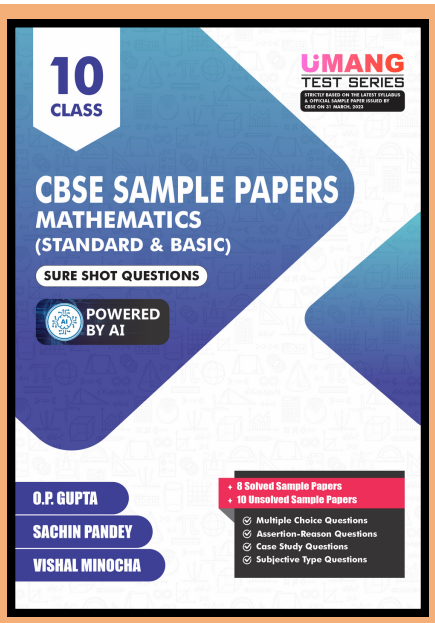

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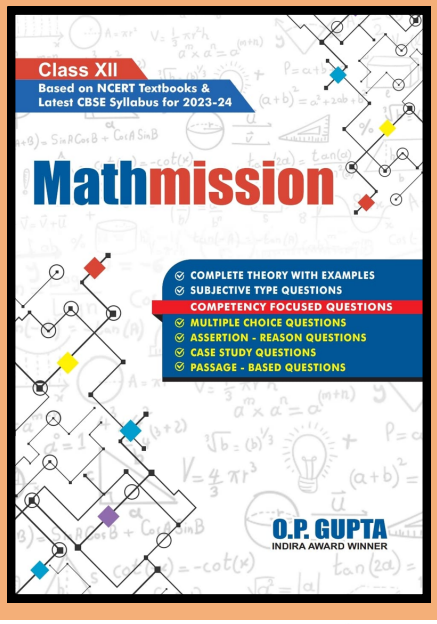

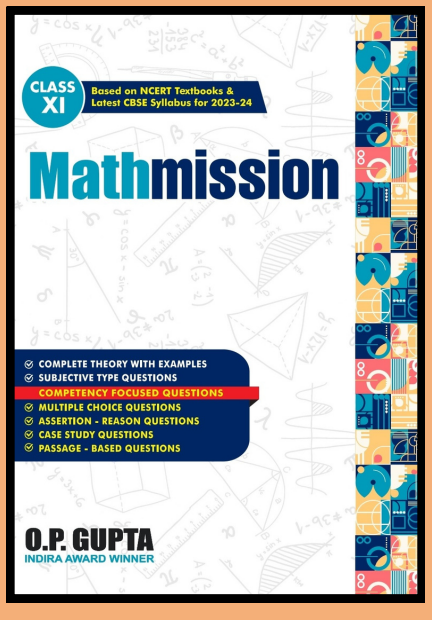

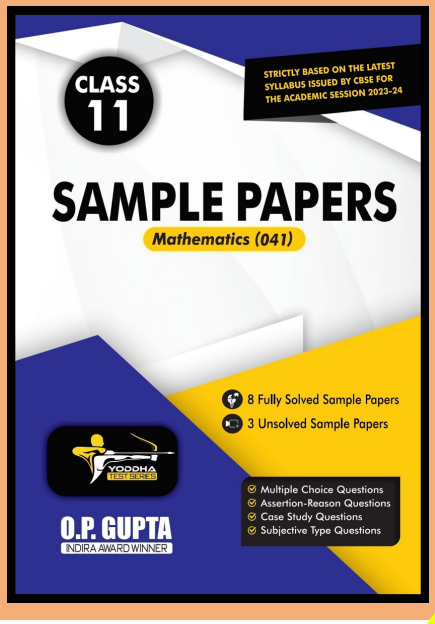

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