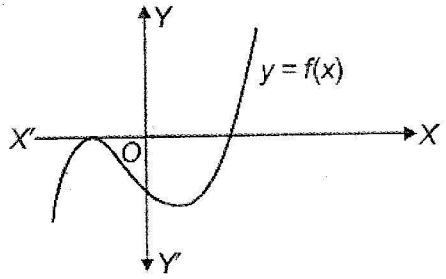
CLASS TEST -1
POLYTECHNIC ENTRANCE
TOPIC-POLYNIMIALS (HCF & LCM)

MULTIPLE CHOICE QUESTIONS

1. Consider the following graph of y = f(x). If n is the degree of f(x), then the minimum possible value of n is



(a) 1 (c) 2

(b) 3 (d) 4

2. If $x+\frac{1}{x}=2$, then $x^3+\frac{1}{x^3}$ is equal to :

(a) –2 (b) 60

(c) 2 (d) 8

3. If α, β are the zeros of polynomial $f(x)=x^2-p(x+1)-c$ such that $(\alpha+1)(\beta+1)=0$, then c =

(a) –7 (b) –2

(c) 4 (d) 1

4. Degree of constant polynomial is

(a) 1 (b) any number

(c) 0 (d) none

5. Degree of quadratic polynomial is

(a) 1 (b) any number

(c) 0 (d) 2

6. When graphs of two linear equations are consistent lines then these lines are said to be :

(a) Dependent (b) Inconsistent

(c) Consistent (d) None of these

7. If $x^2+\frac{1}{x^2}=102$ then $x-\frac{1}{x}$ is equal to :

(a) 12 (b) 10

(c) 8 (d) 5

8. If a + b = 5, a – b = 1, then a^2+b^2 is equal to:

(a) 36 (b) 13

(c) 52 (d) 48

9. The system of simultaneous linear equations $a_1x_1+b_1y+c_1=0$ and $a_2x_2+b_2y+c_2=0$ have no solution then:

(a) $\frac{a_1}{a_2}=\frac{b_1}{b_2}=\frac{c_1}{c_2}$ (b) $\frac{a_1}{a_2}=\frac{b_1}{b_2}\neq\frac{c_1}{c_2}$

(c) $\frac{a_1}{a_2}\neq\frac{b_1}{b_2}=\frac{c_1}{c_2}$ (d) $\frac{a_1}{a_2}\neq\frac{b_1}{b_2}\neq\frac{c_1}{c_2}$

10. If x^3+6x^2+4x+k, is exactly divided by $(x+2)$, then the value of k is :

(a) –6 (b) –8

(c) –10 (d) –7

11. If $(x-2)$, is a factor of $x^2+3qx-2q$, then the value of q is :

(a) –1 (b) 1

(c) –2 (d) 2

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

(a) 1 (b) 2

(c) –2 (d) –3

13. If the polynomial $f(x) = ax^3 + bx + - c$ is divisible by the polynomial $g(x) = x^2 + bx + c$, then ab =

(a) $-\frac{1}{c}$ (b) 1

(c) –1 (d) $\frac{1}{c}$

14. In Q.No. 13, c =

(a) b (b) $2b^2$

(c) $2b$ (d) $-2b$

15. Value of k for which $(x-1)$ is a factor of (x^2-k):

(a) 1 (b) –8

(c) –1 (d) 8

16. If $x^4 + \frac{1}{x^4} = 322$, then $x - \frac{1}{x}$ is equal to :

(a) 4 (b) –4

(c) –2 (d) 8

17. LCM of 25, 125, 625 is :

(a) 625 (b) 225

(c) 25 (d) 125

18 The smallest number which when divided by 3, 4, 5 leaves 1 as remainder is :

(a) 61 (b) 41

(c) 51 (d) 71

19. HCF of 25, 125, 625 is :

(a) 625 (b) 225

(c) 25 (d) 125

20. GCD of $(x+y-z)^7$ and $(x+y-z)^{11}$ is :

(a) $(x+y-z)$ (b) $(x+y-z)^4$

(c) $(x+y-z)^{11}$ (d) $(x+y-z)^7$

21. If three pieces of timber 42 m, 49 m and 63 m long to be divided into planks of same length. The possible length of each plank will be:

(a) 14 m (b) 6 m

(c) 21 m (d) 7 m

22. The HCF and LCM of polynomials $p(x)$ and $x^2+7x+12$, are $(x+3)^2(x+4)$ and $(x+3)$ respectively. The polynomials $p(x)$ is:

(a) x^2+6x+9 (b) $(x+3)$

(c) $(x+3)(x+4)$ (d) $(x+4)$

23. If $f(x) = ax^2 + bx + c$ has no real zeros and $a + b + c < 0$, then

(a) $c < 0$ (b) $c = 0$

(c) $c > 0$ (d) None of these

24. If $x + \frac{1}{x} = 3$, then $x^2 + \frac{1}{x^2}$ is equal to :

(a) $\frac{10}{9}$ (b) 11

(c) $\frac{82}{9}$ (d) 7

25. If $x + 2$ is a factor of $x^2 + ax + 2b$ and $a + b = 4$, then

(a) a = 3, b = 1 (b) a = 5, b = 3

(c) a = 1, b = 3 (d) a = 5, b = – 1

26. The HCF of (x^2-1), (x^2+x) and $(x+1)^2$ is :

(a) $(x-1)$ (b) $(x^2-1)(x+1)^2$

(c) $(x+1)$ (d) $(x^2-1)(x^2+x)$

27 Solve for x and y :

$31x + 43y = 117$, and $43x + 31y = 105$

(a) 1, 2 (b) 2, 1

(c) 43, 31 (d) 31, 43

28 Equation of line parallel to x axis is :

(a) $y = b$ (b) $x = 0$

(c) $x = a$ (d) $y = 0$

29. Polynomial $x^2 + 1$ has ___ zeroes

(a) Only one real

(b) One real and the other non-real.

(c) Only two real

(d) No real

30. Zeroes of the polynomial $4x^2 - 1$ are

(a) Equal in magnitude but opposite in sign

(b) Unequal with the same sign

(c) Equal

(d) Unequal with different sign.

31 If P is the sum of the zeroes and s is the product then quadratic polynomial can be obtained as follows.

(a) $x^2 - sx + p$ (b) $x^2 + px - s$

(c) $x^2 + sx - p$ (d) $x^2 - px + s$

32 Equation of line parallel to y axis is :

(a) $y = 0$ (b) $x = 0$

(c) $x = a$ (d) $y = a$

33. If $2^{x+y} = 4$ and $2^{x-y} = 64$, then value if x is:

(a) –27 (b) –2

(c) 4 (d) 30

34. Cubic polynomial $x = f(y)$ cuts y-axis at almost

(a) Three points (b) Two points

(c) One point (d) Four points

35. A quadratic polynomial, whose sum of zeros is 0 and one zero is 3, is

(a) $x^2 + 9$ (b) $x^2 - 3$

(c) $x^2 - 9$ (d) $x^2 + 3$

36. If the zeros of the polynomial $f(x) = x^3 + x^2 - 9x - 9$ are 3, and – 3, then its third zero is :

(a) 6 (b) –1

(c) 1 (d) 5

37 If β is zero of $f(x)$ then ____ is one of the factors of $f(x)$

(a) $(x-\beta)$ (b) $(x-2\beta)$

(c) $(x+\beta)$ (d) None of these

38. The graph of linear equation is always :

(a) straight line (b) parabola

(c) circle (d) none of these

39. What should be added to the polynomial $x^2 - 5x + 4$, so that 3 is the zero of the resulting polynomial?

(a) 2 (b) –2

(c) 4 (d) 1

40. What should be subtracted to the polynomial $x^2 - 16x + 30$, so that 15 is the zero of the resulting polynomial?

(a) 6 (b) –15

(c) 4 (d) 15

41. If equations $a_1x_1 + b_1y + c_1 = 0$ and $a_2x_2 + b_2y + c_2 = 0$ have infinitely many solution then:

(a) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ (b) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

(c) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} = \frac{c_1}{c_2}$ (d) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

42 A real no. α is a zero of the polynomial $f(x)$ if

(a) $f(\alpha) > 0$ (b) $f(\alpha) < 0$

(c) $f(\alpha) = 0$ (d) None of these

43 The zeroes of a polynomial $f(x)$ are the coordinates of the points where the graph of $y = f(x)$ intersects

(a) y-axis (b) x-axis

(c) Origin (d) (x, y)

44. If $5^{x-y} = 25$ and $5^{3x+2y} = 5$, then :

(a) $x = 1, y = -1$ (b) $x = -1, y = -2$

(c) $x = -1, y = -1$ (d) $x = 1, y = 2$

45. If 2 is a zero of both the polynomial, $3x^2 + ax - 14$ and $2x - b$ then $a - 2b =$ ___

(a) –7 (b) 7

(c) –8 (d) –2

46. If zeroes of the polynomial $ax^2 + bx + c$ are reciprocal of each other than

(a) $b = c$ (b) $a = b$

(c) $a = c$ (d) $a = -c$

47. Three zeroes of $(x + 4)(x^2 - 6x + 8)$ are

(a) –4, –4, –2 (b) 4, 4, –2

(c) –4, –4, 2 (d) 4, –4, 2

48. If $\sqrt{5}$ and $-\sqrt{5}$ are two zeros of the polynomial $x^3 + 3x^2 - 5x - 15$, then its third zero is :

(a) –3 (b) 3

(c) 1 (d) 5

49. If α, β are the zeros of the polynomial $f(x) = 4x^2 + 3x + 7$, then $\frac{1}{\alpha} + \frac{1}{\beta}$ is equal to

(a) $-\frac{7}{3}$ (b) $\frac{7}{3}$

(c) $-\frac{3}{7}$ (d) $\frac{3}{7}$

50. If one zero of the polynomial $f(x) = (k^2 + 4)x^2 + 13x + 4k$ is reciprocal of the other, then k =

(a) –2 (b) 7

(c) –8 (d) 2

51 If the sum of the zeros of the polynomial $f(x) = 2x^3 - 3kx^2 + 4x - 5$ is 6, then the value of k is

(a) –7 (b) 7

(c) 4 (d) –2

52 If $(y - a)$ is factor of $f(y)$ then ___ is a zero of $f(y)$

(a) a (b) y

(c) $2a$ (d) $2y$

53 Which of the following is not correct? A quadratic polynomial may have

(a) Two equal real zeroes

(b) No real zeroes

(c) Two distinct zeroes

(d) Three real zeros.

54. If $3^{2x-y} = 243$ and $3^{x+y} = 81$, then value if x is:
(a) 1 (b) 4
(c) –1 (d) 3

55. If the products of zeros of the polynomial $f(x) = ax^3 - 6x^2 + 11x - 6$ is 4, then a =
(a) $-\frac{2}{3}$ (b) $\frac{2}{3}$
(c) $-\frac{3}{2}$ (d) $\frac{3}{2}$

56. The LCM of $(a^3 + b^3)$ and $(a^4 - b^4)$ is :
(a) $(a^3 + b^3)(a^2 + b^2)(a - b)$
(b) $(a^3 + b^3)(a + b)(a^2 + b^2)$
(c) $(a^2 + b^2)(a^2 - ab + b^2)(a^2 - b^2)$
(d) $(a^3 + b^3)(a^2 - b^2)(a - b)$

57. If one root of the polynomial $f(x) = 5x^2 + 13x + k$ is reciprocal of the other, then the value of k is :
(a) 5 (b) 6
(c) $\frac{1}{6}$ (d) 0

58. If α, β are the zeros of the polynomial $f(x) = ax^2 + bx + c$, then $\frac{1}{\alpha^2} + \frac{1}{\beta^2} =$
(a) $\frac{b^2 + 2ac}{c^2}$ (b) $\frac{b^2 - 2ac}{a^2}$
(c) $\frac{b^2 + 2ac}{a^2}$ (d) $\frac{b^2 - 2ac}{c^2}$

59. The polynomial which when divided by $-x^2 + x - 1$ gives a quotient $x - 2$ and remainder 3, is
(a) $-x^3 + 3x^2 - 3x + 5$ (b) $-x^3 - 3x^2 + 3x - 5$
(c) $x^3 + 3x^2 - 3x + 5$ (d) $-x^3 + 3x^2 + 3x - 5$

60. HCF of $p^6q^2r^4$ and $p^3q^4r^6$ is
(a) $p^3q^2r^4$ (b) $p^3q^4r^6$
(c) p^3qr^6 (d) $p^3q^4r^2$

61. The HCF of $(x^2 - 4), (x^2 - 5x - 6)$ and $(x^2 + x - 6)$ is :
(a) $(x - 2)$ (b) 1
(c) $(x^2 + x + 6)$ (d) $(x^2 + 2)$

62. If $a + b + b = 11, a^2 + b^2 + c^2 = 61$, then $ab + bc + ca$ is :
(a) 36 (b) 42
(c) 24 (d) 30

63. The area of a rectangle is given by $A = 8x^2 - 2x - 15$. if the length be larger than the breadth, it will be :
(a) $(3x + 5)$ (b) $(2x + 5)$
(c) $2(4x + 5)$ (d) $(4x + 5)$

64. If $a^{\frac{1}{3}} + b^{\frac{1}{3}} + c^{\frac{1}{3}} = 0$ then :
(a) $a + b + c = 0$ (b) $(a + b + c)^3 = (3abc)^3$
(c) $(a + b + c)^3 = 3abc$ (d) $(a + b + c)^3 = 0$

ANSWER KEY

1.(c)	2.(c)	3.(d)	4.(c)	5.(d)	6.(a)	7.(b)	8.(b)	9.(b)	10.(b)
11.(a)	12.(a)	13.(b)	14.(c)	15.(a)	16.(a)	17.(a)	18.(a)	19.(c)	20.(d)
21.(d)	22.(a)	23.(a)	24.(d)	25.(a)	26.(c)	27.(a)	28.(a)	29.(d)	30.(a)
31.(d)	32.(c)	33.(c)	34.(a)	35.(c)	36.(c)	37.(a)	38.(a)	39.(a)	40.(d)
41.(a)	42.(c)	43.(d)	44.(a)	45.(a)	46.(c)	47.(d)	48.(a)	49.(c)	50.(d)
51.(c)	52.(a)	53.(d)	54.(d)	55.(d)	56.(c)	57.(a)	58.(d)	59.(a)	60.(a)
61.(b)	62.(d)	63.(d)	64.(a)						