**Binomial Theorem for Positive Integral Index**

**Choose the most appropriate option (a, b, c or d)**

Q 1. The number of terms in the expansion of (1 + 3x + 3x2 + x3)6 is

(a) 18 (b) 9 (c) 19 (d) 24

Q 2. The number of distinct terms in the expansion of (x + y – z)16 is

(a) 136 (b) 153 (c) 16 (d) 17

Q 3. The number of irrational terms in the expansion of 100 is

(a) 97 (b) 98 (c) 96 (d) 99

Q 4. The number of terms whose values depend on x in the expansion of is

(a) 2n + 1 (b) 2n (c) n (d) none of these

Q 5. The number of real negative terms in the binomial expansion of (1 + ix)4n-2, n ∈ N, x > 0, is

(a) n (b) n + 1 (c) n – 1 (d) 2n

Q 6. In the expansion of , the number of terms is

(a) 7 (b) 14 (c) 6 (d) 4

Q 7. The number of terms in the expansion of , n ∈ N, is

(a) 2n (b) 3n (c) 2n + 1 (d) 3n + 1

Q 8. The number of rational terms in the expansion of is

(a) 6 (b) 7 (c) 5 (d) 8

Q 9. The number of terms with integral coefficients in the expansion of (71/3 + 51/2.x)600 is

(a) 100 (b) 50 (c) 101 (d) none of these

Q 10. The sum of the rational terms in the expansion of is

(a) 32 (b) 50 (c) 41 (d) none of these

Q 11. The last term in the binomial expansion of . Then the 5th term from the beginning is

(a) 10C6 (b) 2. 10C4 (c)  (d) none of these

Q 12. If the 4th term in the expansion of (px + x-1)m is 2.5 for all x ∈ R then

(a)  (b)  (c)  (d) none of these

Q 13. In the expansion of (1 + ax)n, n ∈ N, the coefficient of x and x2 are 8 and 24 respectively. Then

(a) a = 2, n = 4 (b) a = 4, n = 2 (c) a = 2, n = 6 (d) a = -2, n = 4

Q 14. In the expansion of , n ∈ N, if the sum of the coefficients of x5 and x10 is 0 then n is

(a) 25 (b) 20 (c) 15 (d) none of these

Q 15. The coefficient of x20 in the expansion of

is

(a) 30C10 (b) 30C25 (c) 1 (d) none of these

Q 16. The coefficient of a8b10 in the expansion of (a + b)18 is

(a) 18C8 (b) 18P10 (c) 218 (d) none of these

Q 17. If the coefficient of the (m + 1)th term and the (m + 3)th term in the expansion of (1 + x)20 are equal then the value of m is

(a) 10 (b) 8 (c) 9 (d) none of these

Q 18. The coefficient of x3 in the expansion of (1 – x + x2)5 is

(a) 10 (b) -20 (c) -50 (d) -30

Q 19. If the coefficients of the 2nd, 3rd and 4th terms in the expansion of (1 + x)n, n ∈ N, are in AP then n is

(a) 7 (b) 14 (c) 2 (d) none of these

Q 20. The coefficient of x6 in {(1 + x)6 + (1 + x)7 + ….+(1 + x)15} is

(a) 16C9 (b) 16C5 – 6C5 (c) 16C6 – 1 (d) none of these

Q 21. The coefficient of x3y4z in the expansion of (1 + x + y – z)9 is

(a) 2.9C7.7C4 (b) -2.9C2.7C3 (c) 9C7.7C4 (d) none of these

Q 22. The coefficient of x13 in expansion of (1 – x)5(1 + x + x2 + x3)4 is

(a) 4 (b) −4 (c) 0 (d) none of these

Q 23. The coefficient of x6.y-2 in the expansion of is

(a) 12C6 (b) -12C5 (c) 0 (d) none of these

Q 24. The greatest value of the term independent of x in the expansion of (x sin α + x-1 cos α)10, α ∈ R, is

(a) 25 (b)  (c)  (d) none of these

Q 25. In the expansion of , the constant term is

(a) 15C6 (b) 0 (c) -15C6 (d) 1

Q 26. The constant term in the expansion of (1 + x)10.is

(a) 22C10 (b) 0 (c) 22C11 (d) none of these

Q 27. The term independent of x in the expansion of is

(a) 11C5 (b) 10C5 (c) 10C4 (d) none of these

Q 28. The middle term in the expansion of is

(a) 2nCn (b)  (c)  (d) none of these

Q 29. The middle term in the expansion of is

(a) 2nCn (b) -2nCn (c) -2nCn-1 (d) none of these

Q 30. If the rth term is the middle term in the expansion of then the (r + 3)th term is

(a) 20C14. (b)  (c)  (d) none of these

Q 31. Let n ∈ N and n < (+1)6. Then the greatest value of n is

(a) 199 (b) 198 (c) 197 (d) 196

Q 32. If the coefficient of the 5th term be the numerically greatest coefficient in the expansion of (1 – x)n then the positive integral value of n is

(a) 9 (b) 8 (c) 7 (d) 10

Q 33. The greatest coefficient in the expansion of (1 + x)2n is

(a)  (b) 2nCn-1 (c) 2nCn+1 (d) none of these

Q 34. Let n be an odd natural number greater than 1. Then the number of zeros at the end of the sum 99n + 1 is

(a) 3 (b) 4 (c) 2 (d) none of these

Q 35. Let f(n) = 10n + 3.4n+2 + 5, n ∈ N. The greatest value of the integer which divides f(n) for all n is

(a) 27 (b) 9 (c) 3 (d) none of these

Q 36. 260 when divided by 7 leaves the remainder

(a) 1 (b) 6 (c) 5 (d) 2

Q 37. If {x} denotes the fractional part of x then , n ∈ N, is

(a)  (b)  (c)  (d) none of these

Q 38. The sum of the coefficients in the binomial expansion of is equal to 6561. The constant term in the expansion is

(a) 8C4 (b) 16.8C4 (c) 6C4.24 (d) none of these

Q 39. The sum of the numerical coefficients in the expansion of is

(a) 1 (b) 2 (c) 212 (d) none of these

Q 40. The sum of the last ten coefficients in the expansion of (1 + x)19 when

(a) 218 (b) 219 (c) 218 – 19C10 (d) none of these

Q 41. The sum of the coefficients of x2r, r = 1, 2, 3,….,, in the expansion of (1 + x)n is

(a) 2n (b) 2n-1 – 1 (c) 2n – 1 (d) 2n-1 + 1

Q 42. The sum of the coefficients in the polynomial expansion of (1 + x – 3x2)2163 is

(a) 1 (b) -1 (c) 0 (d) none of these

Q 43. The sum of the coefficients of all the integral powers of x in the expansion of is

(a) 340 + 1 (b) 340 – 1 (c)  (d) 

Q 44. If (1 + x – 2x2)8 = a0 + a1x + a2x2 + ….. + a16x16 then the sum is equal to

(a) -27 (b) 27 (c) 28 (d) none of these

Q 45. The sum 20C0 + 20C1 + 20C2 + …. + 20C10 is equal to

(a)  (b)  (c)  (d) none of these

Q 46. The sum 10C3 + 11C3 + 12C3 +….+ 20C3 is equal to

(a) 21C4 (b) 21C4 + 10C4 (c) 21C17 – 10C6 (d) none of these

Q 47. If (1 + x)10 = a0 + a1x + a2x2 +….+ a10x10 then

(a0 – a2 + a4 – a6 + a8 – a10)2 + (a1 – a3 + a5 – a7 + a9)2 is equal to

(a) 310 (b) 210 (c) 29 (d) none of these

Q 48. The sum 10C0 − 10C1 + 2.10C2 – 22 . 10C3 + …. + 29 . 10C10 is equal to

(a)  (b) 0 (c)  (d) none of these

Q 49. 1.nC1 + 2.nC2+ 3.nC3 +….+ n.nCn is equal to

(a)  (b)  (c)  (d) none of these

Q 50. If equals

(a) (n – 1)an (b) nan (c)  (d) none of these

Q 51. The sum of the series is equal to

(a) n . 2n-1 + a (b) 0 (c) a (d) none of these

Q 52. Let (1 + x)n . Then is equal to

(a)  (b)  (c)  (d) 

Q 53. The value of is equal to

(a) 5(2n – 9) (b) 10n (c) 9(n – 4) (d) none of these

Q 54. The sum is equal to

(a) n.22n-1 (b) 22n-1  (c) 2n-1 + 1 (d) none of these

Q 55. The sum is equal to

(a) 219 (b) 0 (c) 220-1 (d) none of these

**Choose the correct options. One or more options may be correct.**

Q 56. Let . Then

(a) f(x) is a polynomial of the sixth degree in x (b) f(x) has exactly two terms

(c) f(x) is not a polynomial in x (d) coefficient of x6 is 64

Q 57. The coefficient of a8b6c4 in the expansion of (a + b + c)18 is

(a) 18C14 . 14C8 (b) 18C10. 10C6 (c) 18C6 . 12C8 (d) 18C4 . 14C6

Q 58. The term independent of x in the expansion of is

(a) 0, if n is odd (b) , if n is odd

(c) , if n is even (d) none of these

Q 59. The coefficient of the (r + 1)th term of when expanded in the descending powers of x is equal to the coefficient of the 6th term of when expanded in ascending powers of x. The value of r is

(a) 5 (b) 6 (c) 14 (d) 15

Q 60. If (1 + x)2n = a0 + a1x + a2x2 + …. + a2nx2n then

(a) a0 + a2+ a4 + ….(a0 + a1 + a2 + a3 +….) (b) an+1 < an

(c) an-3 = an+3 (d) none of these

Q 61. In the expansion of ,

(a) the number of rational terms = 4 (b) the number of irrational terms = 18

(c) the middle term is irrational (d) the number of irrational terms = 17

Q 62. Let n ∈ N. If (1 + x)n = a0 + a1x + a2x2 + …. + anxn, and an-3, an-2, an-1 are in AP then

(a) a1, a2, a3 are in AP (b) a1, a2, a3 are in HP (c) n = 7 (d) n = 14

Q 63. Let R = and [R] = the greatest integer less than or equal to R.

(a) [R] is even (b) [R] is odd

(c) R – [R] = 1 (d) none of these

Q 64. is equal to

(a) for even values of n only (b) for odd values of n only

(c) for all n ∈ N (d) none of these

Q 65. In the expansion of (x + y + z)25

(a) every term is of the form (b) the coefficient of x8y9z9 is 0

(c) the number of terms is 325 (d) none of these

1c 2b 3a 4b 5a 6d 7c 8b 9c 10c

11a 12b 13a 14c 15b 16a 17c 18d 19a 20a

21b 22a 23c 24c 25c 26a 27a 28b 29a 30c

31c 32b 33a 34c 35b 36a 37c 38b 39c 40a

41b 42b 43d 44a 45d 46c 47b 48a 49c 50c

51c 52b 53a 54a 55b 56abd 57abcd 58ac 59ad 60abc

61bc 62ac 63bc 64c 65ab