MATHS

BOOKS - HIMALAYA MATHS (KANNADA ENGLISH)

BINOMIAL THEOREM

Question Bank

1. The term containing x^3 in the expansion $\left(\sqrt{x^5}+\frac{3}{\sqrt{x^3}}\right)^6$ appears in

A. 3^{rd} term

B. 5^{th} term

C. 6^{th} term

D. 4^{th} term

Answer: D

Watch Video Solution

2. The coefficient of x^4 in $\left(\frac{x}{2} - \frac{3}{x^2}\right)^{10}$ is

A. $\frac{405}{256}$

B. $\frac{405}{225}$

C. $\frac{405}{201}$

D. $\frac{226}{405}$

Answer: A

Watch Video Solution

3. If the coeff. of x in $\left(x^2+\frac{k}{x}\right)^5$ is 270 then k=

A. 3

B. 4

C. 5

D. 2

Answer: A

Watch Video Solution

4. The coefficients of x^n in the expansion of $(1+x)^{2n}$ and $(1+x)^{2n-1}$ are in the ratio

A. $1:2$

B. $1:3$

C. $3:1$

D. $2:1$

Answer: D

Watch Video Solution

5. If the coefficients of the middle term of $(1+x)^{2n+2}$ is p and the coefficient of middle terms in the expansion of $(1+x)^{2n+1}$ are q and r, then

A. $a+b=c$

B. $a+c=b$

C. $a=b+c$

D. $a+b+c=0$

Answer: C

Watch Video Solution

6. The term independent of x in $\left(2x^{\frac{1}{2}} - 3x^{-\frac{1}{3}}\right)^{20}$ is

A. $20C_{12}.\ 2^9.\ 3^{12}$

B. $20C_{12}.\ 2^8.\ 3^{11}$

C. $20C_{12}.\ 2^8.\ 3^{12}$

D. $20C_{12}.\ 2^9.\ 3^{11}$

Answer: C

Watch Video Solution

7. The term independent of x in the expansion $\left(\sqrt{x}-\frac{2}{x}\right)^{18}$ appears in

A. $7^{th} term$

B. $5^{th} term$

C. $6^{th} term$

D. $4^{th} term$

Answer: A

Watch Video Solution

8. In the expansion $\left(\sqrt{x}-\frac{2}{x}\right)^{18}$ the term independent of x is

A. $18C_6 2^5$

B. $18C_6 . 2^6$

C. $18C_5 . 2^6$

D. $18C_4 . 2^5$

Answer: B

Watch Video Solution

9. The term independent of x in the expansion of $(1+x)^n\left(1-\frac{1}{x}\right)^n$ is:

A. C_(0)^(2)+2. C_(1)^(2)+.. .+(n+1). C_(n)^(2)

B. (C_0+C_1+C_(2)+.. .+C_(n))^(2)

C. C_(0)^(2)+C_(1)^(2)+C_(2)^(2)+.. .+C_(n)^(2)

D. none of these

Answer: C

Watch Video Solution

10. Constant term in the expansion of $\left(x - \frac{1}{x}\right)^{10}$ is

A. 152

B. -152

C. -252

D. 252

Answer: C

Watch Video Solution

11. Find the middle term of $\left(x - \frac{1}{x}\right)^{16}$

A. $10C_5 . \left(\frac{2}{3}\right)^5$

B. $-10C_3 . \left(\frac{2}{3}\right)^5$

C. $10C_6 . \left(\frac{2}{3}\right)^5$

D. $-10C_6 . \left(\frac{2}{3}\right)^5$

Answer: B

Watch Video Solution

12. If the coefficients of x^7 and x^8 in $\left(2 + \frac{x}{3}\right)^n$ are equal, then n is

A. 50

B. 60

C. 55

D. 65

Answer: C

Watch Video Solution

13. In the expansion of $(1+x)^{11}$, the 5^{th} term is 24 times the 3^{rd} term, then x=

A. 2

B. -2

C. ±2

D. none of these

Answer: C

Watch Video Solution

14. If $\frac{T_2}{T_3}$ is the expansion of $(a+b)^n$ and $\frac{T_3}{T_4}$ in the expansion of $(a+b)^{n+3}$ equal, then n=

A. 3

B. 4

C. 5

D. 6

Answer: C

Watch Video Solution

15. If in the expansion $(1+x)^n$ the 5^{th} term is 4 times the 4^{th} term and the 4^{th} term is 6 times the `3^(rd)' term, then n=

A. 9

B. 10

C. 11

D. 15

Answer: C

Watch Video Solution

16. Ratio of 3^{rd} and 4^{th} terms of $\left(x+\frac{2}{3x^2}\right)^7$ is

A. x^3

B. $3x^3$

C. $0.9x^3$

D. $0.3x^3$

Answer: C

Watch Video Solution

17. If T, denotes the r^{th} term in the expansion of $\left(x+\frac{1}{y}\right)^{23}$ then

A. $T_{12}=T_{13}$

B. $x^2.\,T_{13}=T_{12}$

C. $T_{12}=xy.\,T_{13}$

D. $T_{12}+T_{13}=25$

Answer: C

Watch Video Solution

18. In the expansion of $(1+x)^{10}$ the coefficient of $(2r+1)^{th}$ term is equal to the coefficient of $(4r+5)^{th}$ term then r=

A. 0

B. 1

C. 2

D. 3

Answer: B

Watch Video Solution

19. If the coefficient of x^7 in $\left[ax^2 + \left(\frac{1}{bx}\right)\right]^{11}$ equals the coefficient of x^{-7} in $\left[ax - \left(\frac{1}{bx^2}\right)\right]^{11}$, then a and b satisfy the relation:

A. 0

B. 1

C. -1

D. 2

Answer: B

Watch Video Solution

20. If 21^{st} and 22^{nd} terms in the expansion of $(1-x)^{44}$ are equal then x=

A. $\frac{8}{7}$

B. $-\frac{7}{8}$

C. $\frac{7}{8}$

D. $-\frac{8}{7}$

Answer: B

Watch Video Solution

21. If the coefficients of 5^{th}, 6^{th} and 7^{th} terms of $(1+x)^n$ are in arithmetic progression, then the value of n is

A. 6

B. 7

C. 8

D. 9

Answer: B

Watch Video Solution

22. If the coefficients of second, third and fourth terms in the expansion of $(1+x)^{2n}$ are in A.P, then,

A. $2n^2 - 9n + 7 = 0$

B. $2n^2 + 5n + 7 = 0$

C. $n^2 - 9n + 7 = 0$

D. $2n^2 - 5n - 7 = 0$

Answer: A

Watch Video Solution

23. The sum of the coefficients in the expansion of $(1-x)^{10}$ is

A. 1024

B. 0

C. 1

D. 10^2

Answer: B

Watch Video Solution

24. If the sum of the coefficients in the expansion of $(x+y)^n$ is 4096, then the greatest coefficient in the expansion is

A. 1594

B. 792

C. 924

D. none of these

Answer: C

Watch Video Solution

25. The sum of the coefficients in the expansion of $(6x - 5y)^n$ where n is a positive integer, is

A. 1

B. -1

C. 2^n

D. 2^{n-1}

Answer: A

Watch Video Solution

26. The sum of the coefficients in the expansion of $\left(ax^2 - 2x + 1\right)^{35}$ is equal to sum of the coefficients in the expansion of $(x - ay)^{35}$, then a=

A. 3

B. 2

C. 1

D. -2

Answer: C

Watch Video Solution

27. If $\left(1+2x+x^2\right)^n = \sum_{r=0}^{2n} a_r x^r$, then a_r=

A. $(nC_r)^2$

B. $nC_r . nC_{r+1}$

C. $(2n)C_{r+1}$

D. $(2n)C_r$

Answer: D

Watch Video Solution

28. If $\left(1+x-2x^2\right)^6 = 1+a_1x+a_zx^2+l...+a_{12}x^{12}$ then

$a_2+a_4+..+a_{12}$=

A. 21

B. 11

C. 31

D. 41

Answer: C

Watch Video Solution

29. If C_n is the coefficient of x^n in the expansion of $(1+x)^n$ then $C_1 + 2.\ C_2 + 3.\ C_3 + \ldots + n.\ C_n$

A. 2 n

B. $n.\ 2n$

C. $n.\ 2^{n+1}$

D. $n.\ 2^{n-1}$

Answer: D

Watch Video Solution

30. If $(1+x)^n = C_0 + C_1 x + C_2 x^2 + \ldots + C_n x^n$, then the value of :

$C_1 + 2C_2 + 3C_3 + \ldots + nC_n$ is:

A. $\frac{(2n)!}{(n!)^2}$

B. $\frac{(2n)!}{(n-1)!(n+1)!}$

C. $\frac{(2n)!}{(n-2)!(n+2)!}$

D. $\frac{(2n)!}{(n+2)!}$

Answer: B

Watch Video Solution

31. The largest term in the expansion of $(3+2x)^{50}$ where $x=\frac{1}{5}$ is:

A. $4^{th}term$

B. $5^{th}term$

C. 6^{th}

D. $7^{th}term$

Answer: C

Watch Video Solution

32. The numerically greatest term of $(2x-3y)^{12}$ when $x=1$ and $y=\frac{5}{2}$ is

A. a)7

B. b)8

C. c)9

D. d)11

Answer: D

Watch Video Solution

33. The greatest coefficient in the expansion of $(1+x)^{24}$ is

A. $24C_{13}$

B. $24C_{11}$

C. $24C_{24}$

D. $24C_{12}$

Answer: D

Watch Video Solution

34. If A is the sum of the odd terms and B is the sum of even terms in the expansion of $(x+a)^n$ then $A^2 - B^2$=

A. 1: $\left(x^2 + a^2\right)^n$

B. 2: $\left(x^2 - a^2\right)^n$

C. 3: $2\left(x^2 - a^2\right)^n$

D. 4: $2\left(x^2 + a^2\right)^n$

Answer: B

Watch Video Solution

35. The number of terms in the expansion

$(1+x)^{101}\left(1-x+x^2\right)^{100}$ is

A. 1: 302

B. 2: 202

C. 3: 301

D. 4: 101

Answer: B

Watch Video Solution

36. The number of terms in the expansion of

$\left(1+3x+3x^2+x^3\right)^7$ is

A. 21

B. 22

C. 20

D. 19

Answer: B

Watch Video Solution

37. The total number of terms in the expansion of

$(x+y)^{150}+(x-y)^{150}$

after simplification is

A. 70

B. 75

C. 76

D. 302

Answer: C

Watch Video Solution

38. If the coefficient of x^7 and x^8 in $\left(2+\frac{x}{3}\right)^n$ are equal, then n is

A. 56

B. 55

C. 15

D. 15

Answer: B

Watch Video Solution

39. If $(1+\alpha x)^n = 1 + 8x + 24x^2 + \ldots$, then the value of α and n is

A. 2,4

B. 2,3

C. 3,6

D. 1,2

Answer: A

Watch Video Solution

40. The coefficients of $(2r+4)^{th}$ and $(r-2)^{th}$ terms in the expansion of $(1+x)^{18}$ are equal. Then the value of r=

A. 12

B. 10

C. 8

D. 6

Answer: D

Watch Video Solution

41. If the r^{th} term in the expansion of $\left(\frac{x}{3}-\frac{2}{x^2}\right)^{10}$ contains x^4, then r=

A. 1: 2

B. 2: 3

C. 3: 4

D. 5

Answer: B

Watch Video Solution

42. The coefficient of x^{17} in

$(x-1)(x-2)(x-3)\ldots(x-18)$ is:

A. 342

B. $\frac{171}{2}$

C. -171

D. 684

Answer: C

Watch Video Solution

43. The value of x for which the sixth term in the expansion of $\left[2^{\log_2\left(\sqrt{9^{x-1}+7}\right)}+\frac{1}{2^{1/5\log_2\left(3^{x-1}+1\right)}}\right.$ is 84, is

A. 4 or 2

B. 3 or 1

C. 1 or 2

D. 1 or 4

Answer: C

Watch Video Solution

44. If in the expansion of $(a+x)^n$, P and Q represent the sum of odd and even terms respectively, then P^2-Q^2 equals

A. $\left(a^2 - x^2\right)^n$

B. $\left(a^2 - x^2\right)^{2n}$

C. $\left(a^2 + x^2\right)^{2n}$

D. $\left(a^2 + x^2\right)^n$

Answer: A

Watch Video Solution

45. If the coefficients of 2nd, 3rd and 4th terms in the expansion of $(1 + x)^n$ are in A.P., then the value of n is:

A. 5

B. 2

C. 7

D. 9

Answer: C

Watch Video Solution

46. If the rth term is the middle term in the expansion of $\left(x^2 - \frac{1}{2x}\right)^{20}$, then the (r+3)th term is:

A. $20C_{14} \cdot \frac{1}{2^{14}} \cdot x$

B. $20C_{12} \cdot \frac{1}{2^{12}} \cdot x^2$

C. $-\frac{1}{2^{13}} \cdot 20C_7 \cdot x$

D. $20C_{13} \cdot \frac{1}{2^{13}} \cdot x^2$

Answer: C

Watch Video Solution

47. The sum

$$\frac{1}{2}{}^{10}C_0 - {}^{10}C_1 + 2.\,{}^{10}C_2 - 2^2 \cdot {}^{10}C_3 + \ldots + 2^9 \cdot {}^{10}C_{10}$$

equals:

A. $\frac{1}{2}$

B. 0

C. $\frac{1}{2}.\,3^{10}$

D. $\frac{1}{2}.\,2^{10}$

Answer: A

Watch Video Solution

48. The value of:

${}^{15}C_0^2 - {}^{15}C_1^2 + {}^{15}C_2^2 - \ldots - {}^{15}C_{15}^2$ is:

Watch Video Solution

49. If the expansion of $\left(x^2+\frac{2}{x}\right)^n$ for positive integer n has 13th term independennt of x, then the sum of divisors of n is:

A. 36

B. 38

C. 39

D. 32

Answer: C

Watch Video Solution

50. The fourth term in the binomial expansion of $\left(x^2 + \frac{2}{x^2}\right)^n$ is independent of x, then n=

A. 2

B. 3

C. 4

D. 6

Answer: D

Watch Video Solution

51. Sum to $(n+1)$ terms of the series: $\frac{C_0}{2} - \frac{C_1}{3} + \frac{C_2}{4} - \frac{C_3}{5} + \ldots$ is:

A. $\frac{1}{n+1}$

B. $\frac{1}{n+2}$

C. $\frac{1}{n(n+1)}$

D. $\frac{1}{(n+1)(n+2)}$

Answer: D

Watch Video Solution

52. Value of $2C_0 + \frac{2^2}{2}C_1 + \frac{2^3}{3}C_2 + \ldots + \frac{2^{11}}{11}C_{10}$ is:

A. $\frac{3^{11}-1}{11}$

B. $\frac{2^{11}-1}{11}$

C. $\frac{11^3-1}{11}$

D. $\frac{11^2-1}{11}$

Answer: A

Watch Video Solution

53. $20C_0 + 20C_1 + 20C_2 + \ldots + 20C_{10}$=

A. $2^{20} + \frac{20!}{(10!)^2}$

B. $2^{19} + \frac{20C_{10}}{2}$

C. $2^{19} + 20C_{10}$

D. $2^{19} - \frac{1}{2}\frac{20!}{(10!)^2}$

Answer: B

Watch Video Solution

54. If the coefficients of x^7 and x^8 in $\left(2 + \frac{x}{3}\right)^n$ are equal, then n is

A. 56

B. 55

C. 45

D. 15

Answer: B

Watch Video Solution

55. The coefficient of x^5 in $\left(1+x^2\right)^5(1+x)^4$ is

A. a.20

B. b.30

C. c.60

D. d.55

Answer: C

Watch Video Solution

56. In the expansion of $\left(x^2 + \frac{2}{x}\right)^n$ for positive integer n has a term independent of x, then n is

A. a.16

B. b.18

C. c.20

D. d.19

Answer: B

Watch Video Solution

57. If the r^{th} term in the expansion of $\left(\frac{x}{3}-\frac{2}{x^2}\right)^{16}$ contains x^4, then r=

A. a.4

B. b.3

C. c,2

D. d.5

Answer: B

Watch Video Solution

58. The sum of the coefficients in the expansion of $\left(ax^2-2x+1\right)^{35}$ is equal to sum of the coefficients in the expansion of $(x-ay)^{35}$, then a=

A. any real number

B. 1

C. 0

D. 2

Answer: B

Watch Video Solution

59. If the coefficient of 4^{th} term in the expansion of $\left(x+\frac{\alpha}{2x}\right)^n$ is 20, then the respective values ofalpha and n are

A. 2,7

B. 5,8

C. 3,6

D. 2,6

Answer: D

Watch Video Solution

60. If the rth term is the middle term in the expansion of $\left(x^2 - \frac{1}{2x}\right)^{20}$, then the (r+3)th term is:

A. $20C_{12} \cdot \frac{1}{2^{12}} \cdot x^2$

B. $-\frac{1}{2^{13}} \cdot 20C_7 \cdot x$

C. $20C_{14} \cdot \frac{1}{2^{14}} \cdot x$

D. $20C_{13} \cdot \frac{1}{2^{12}} \cdot x$

Answer: B

Watch Video Solution

61. The coefficient of x^{13} in the expansion of $(1-x)^5\left(1+x+x^2+x^3\right)^4$ is

A. -4

B. 4

C. 1

D. 0

Answer: B

Watch Video Solution

62. The coefficient of $\frac{1}{y^2}$ in $\left(y+\frac{c^3}{y^2}\right)^{10}$ is

A. $187c^{12}$

B. $\frac{210}{c^{12}}$

C. $\frac{c^{12}}{210}$

D. $210c^{12}$

Answer: D

Watch Video Solution

63. If the r^{th} term in the expansion of $\left(\frac{x}{3}-\frac{2}{x^2}\right)^{10}$ contains x^4, then r=

A. 2

B. 3

C. 4

D. 5

Answer: B

Watch Video Solution

64. The 7^{th} term in $\left(\frac{1}{y}+y^2\right)^{10}$, when expanded in descending powers of y is

A. $\frac{210}{y^2}$

B. $\frac{y^2}{210}$

C. $210y^2$

D. $187y^2$

Answer: C

Watch Video Solution

65. The term independent of x in $(1+x)^m\left(1+\frac{1}{x}\right)^n$

A. a.$(m+n)C_m$

B. b. $(m+n)C_n$

C. c$(m+n)C_{n-n}$

D. d. mC_n

Answer: B

Watch Video Solution

66. The 6^{th} term for the end of the expansion of $\left(3x-\frac{1}{x^2}\right)^{10}$ is

A. $10C_5.\,3^5.\,\frac{1}{x^5}$

B. $-10C_5.\,3^5.\,\frac{1}{x^5}$

C. $10C_4 . 3^4 . \frac{1}{x^6}$

D. $-10C_4 . 3^4 . \frac{1}{x^6}$

Answer: B

Watch Video Solution

67. The last term in the binomial expression of $\left(\sqrt[3]{2} - \frac{1}{\sqrt{2}}\right)^n$ is $\left(\frac{1}{3} \cdot \frac{1}{\sqrt[3]{9}}\right)^{\log_3 8}$. Then the 5th term from the beginning is

A. $\frac{1}{2} . 10C_4$

B. $2 . 10C_4$

C. $10C_4$

D. $10C_6$

Answer: D

Watch Video Solution

68. The number of non zero terms in the expansion of $\left(1+2\sqrt{3}x\right)^9+\left(1-2\sqrt{3}x\right)^9$ is

A. 9

B. 0

C. 10

D. 5

Answer: D

Watch Video Solution

69. The number of terms in the expansion of $\left(\sqrt{5}+4_{\sqrt{11}}\right)^{124}$ which are integers, is equal to

A. a.0

B. .b30

C. c.31

D. d.32

Answer: D

Watch Video Solution

70. If r^{th} and $(r+1)^{th}$ term in the expansion of $(1+x)^n$ are equal, then n=

A. $\frac{(1+x)r-x}{3x}$

B. $\frac{(1+x)r-x}{4x}$

C. $\frac{(1+x)r-x}{r}$

D. $\frac{(1+x)r-x}{x}$

Answer: D

Watch Video Solution

71. If the coefficients of r^{th} and $(r+1)^{th}$ term in the expansion of $(1+x)^n$ are equal then n=

A. $2r+1$

B. $2r-1$

C. $2r$

D. r

Answer: B

Watch Video Solution

72. The greatest coefficient in the expansion of $(1+x)^{24}$ is

A. $2nC_n$

B. $2nC_{n-1}$

C. $2nC_{n-2}$

D. $2nC_{n-3}$

Answer: A

Watch Video Solution

73. If the second term in the expansion

$\left((a)^{\frac{1}{13}}+\frac{a}{\sqrt{a^{-1}}}\right)^{n}$ is $14a^{\frac{5}{2}}$ then the value of $\frac{{}^{n}C_{3}}{{}^{n}C_{2}}$ is

A. 1)4

B. 2)3

C. 3)12

D. 4)6

Answer: A

Watch Video Solution

74. The sum of last ten coefficients in the expansion

of $(1+x)^{19}$ when expanded in ascending powers of x is

A. 2^{18}

B. 2^{19}

C. $2^{18} - 19C_{10}$

D. $2^{18} + 19C_{10}$

Answer: A

Watch Video Solution

75. $\frac{1}{n!} + \frac{1}{2!(n-2)!} + \frac{1}{4!(n-4)!} + \ldots. =$

A. 1) $\frac{2^{n-1}}{n!}$

B. 2) $\frac{2^{n-1}}{n!}$

C. 3) $\frac{2^{n}}{n!}$

D. 4) $\frac{2^{n-2}}{(n-1)!}$

Answer: A

Watch Video Solution

76. The coefficient of x^5 in the expansion of

$(1+x)^{21}+(1+x)^{22}+\ldots+(1+x)^{30}$ is

A. $51C_5$

B. $9C_5$

C. $30C_5+20C_5$

D. $31C_6-21C_6$

Answer: D

Watch Video Solution

77. The coefficient of x^6 in:

$\left[(1+x)^6+(1+x)^7+\ldots+(1+x)^{15}\right]$ is:

A. $16C_5-6C_5$

B. $16C_6-1$

C. $16C_9$

D. $16C_9-I$

Answer: C

Watch Video Solution

78. Numerically the greatest term in the expansion of $(3-5x)^{15}$ when $x=\frac{1}{5}$ is

A. 1: $15C_3\times 3^{10}$

B. 2: $15C_3 \times 3^{11}$

C. 3: $15C_{12} \times 3^{12}$

D. 4: $15C_{11} \times 3^{12}$

Answer: C

Watch Video Solution

79. The greatest term in the expansion of $(1+x)^{10}$ when $x = \frac{2}{3}$ is

A. 4^{th}

B. 5^{th}

C. 6^{th}

D. 3^{rd}

Answer: B

Watch Video Solution

80. The coefficients of $(2r+4)^{th}$ and $(r-2)^{th}$ terms in the expansion of $(1+x)^{18}$ are equal. Then the value of r=

A. 5

B. 6

C. 7

D. 9

Answer: B

Watch Video Solution

81. If the coefficients of r^{th}, $(r+1)^{th}$ and $(r+2)^{th}$ terms in the expansion of $(1+x)^{14}$ are in A.P, then the value of r is

A. 5,9

B. 6,9

C. 7,9

D. 8,9

Answer: A

Watch Video Solution

82. The number of terms in the expansion of $(2x+3y-4z)^n$ is

A. 1) $n+1$

B. 2) $2(n+3)$

C. 3) $\frac{(n+1)}{2}$

D. 4) $\frac{(n+1)(n+2)}{2}$

Answer: D

Watch Video Solution

83. If $\left(1+x+x^2\right)^n = a_0 + a_1 x + a_2 x^2 + \ldots + a_{2n} x^{2n}$, then $a_0 + a_2 + a_4 + \ldots + a_{2n}$ equals

A. 3^n

B. 3^{n+1}

C. 3^{n-1}

D. 3^{-n}

Answer: C

Watch Video Solution

84. If $\left(1+x+x^2\right)^n = a_0 + a_1 x + a_2 x^2 + \ldots + a_{2n} x^{2n}$ then the value of $a_0 + a_3 + a_6 + \ldots$ is

A. 1: 3^n

B. 2: 3^{n+1}

C. 3: $3^{-\pi}$

D. 4: 3^{n-1}

Answer: D

Watch Video Solution

85. If $\left(1+x+x^2\right)^n = a_0 + a_1 x + a_2 x^2 + \ldots + a_{2n} x^{2n}$, then $a_0 + a_2 + a_4 + \ldots + a_{2n}$ equals

A. 1: 3^n

B. 2: 3^{n-1}

C. 3: 3^{n+1}

D. 4: 3^{-n}

Answer: B

Watch Video Solution

86. The value of $\sum_{r=1}^{10} r \frac{nC_r}{nC_{r-1}}$ =

A. $5(2n-9)$

B. $10n$

C. $9(n-4)$

D. $5(n-4)$

Answer: A

Watch Video Solution

87. $6^n - 5n$ when divided by 25 leaves the remainder

A. a)1

B. b)2

C. c)4

D. d)6

Answer: A

Watch Video Solution

88. 2^{60} when divided by 7 leaves the remainder

A. 1

B. 6

C. 5

D. 2

Answer: A

Watch Video Solution

89. If the middle term of $\left(\frac{1}{x}+x\sin x\right)^{10}$ is equal to $7\frac{7}{8}$ then value of x is :

A. $2n\pi+\frac{\pi}{6}$

B. $n\pi+\frac{\pi}{6}$

C. $n\pi+(-1)^n\frac{\pi}{6}$

D. $n\pi + (-1)^n \frac{\pi}{3}$

Answer: C

Watch Video Solution

90. If A and B are coefficients of x^n in the expansion of $(1+x)^{2n}$ and $(1+x)^{2n-1}$ respectively, then $\frac{A}{B}$ equals:

A. 1

B. 2

C. $\frac{1}{2}$

D. $\frac{1}{n}$

Answer: B

Watch Video Solution

91. If the coefficients of 2nd, 3rd and 4th terms in the expansion of $(1+x)^n$ are in A.P., then the value of n is:

A. 2

B. 7

C. 11

D. 14

Answer: B

Watch Video Solution

92. The coefficients of x^n in the expansion of $(1+x)^{2n}$ and $(1+x)^{2n-1}$ are in the ratio

A. $1:2$

B. $1:3$

C. $3:1$

D. $2:1$

Answer: D

Watch Video Solution

93. The two successive terms in the expansion of $(1+x)^{24}$ whose coefficients are in the ratio 1:4 are

A. 3^{rd} and 4^{th}

B. 4^{th} and 5^{th}

C. 5^{th} and 6^{th}

D. 6^{th} and 7^{th}

Answer: B

Watch Video Solution

94. Given the integers $r > 1, n > 2$ and coefficients of (3r)th and (r+2)nd terms in the binomial expansion of $(1+x)^{2n}$ are equal, then:

A. $n = 2r$

B. $n = 3r$

C. $n = 2r + 1$

D. none of these

Answer: A

Watch Video Solution

95. The total number of terms in the expansion of $(x+a)^{100}+(x-a)^{100}$ after simplification is

A. 50

B. 202

C. 51

D. none of these

Answer: C

Watch Video Solution

96. The ratio of the coefficient of x^{15} to the term independent of x in $\left(x^2+\frac{2}{x}\right)^{15}$ is

A. $12:32$

B. $1:32$

C. $32:12$

D. $32:1$

Answer: B

Watch Video Solution

97. The number of terms in the expansion of $(a+b+c)^n$, where $n \in N$ is:

A. $\frac{(n+1)(n+2)}{2}$

B. $n+1$

C. $n+2$

D. $(n+1)n$

Answer: A

Watch Video Solution

98. The coefficients of x^p and x^q (p and q are positive integers in the expansion of $(1+x)^{p+q}$ are:

A. equal

B. equal with opposite signs

C. reciprocal to each other

D. none of these

Answer: A

Watch Video Solution

99. If $\left(1+x+x^2\right)^n = a_0 + a_1 x + a_2 x^2 + \ldots + a_{2n} x^{2n}$, then $a_0 + a_2 + a_4 + \ldots + a_{2n}$ equals

A. $\frac{3^n + 1}{2}$

B. $\frac{3^n - 1}{2}$

C. $\frac{1 - 3^n}{2}$

D. $3^n + \frac{1}{2}$

Answer: A

Watch Video Solution

100. If the coefficients of x^7 and x^8 in $\left(2 + \frac{x}{3}\right)^n$ are equal, then n is

A. 56

B. 55

C. 45

D. 15

Answer: B

Watch Video Solution

101. The total number of terms in the expansion of $(x+a)^{51}-(x-a)^{51}$ after simplification is

A. 102

B. 25

C. 26

D. none of these

Answer: C

Watch Video Solution

102. If x, y and r are positive integers , then : ${}^{x}C_{r} + {}^{r}C_{r-1}{}^{y}C_{1} + {}^{x}C_{r-2}{}^{y}C_{2} + \ldots\ldots\ldots + {}^{y}C_{r}$ =

A. $\frac{x1.\,y!}{r!}$

B. $\frac{(x+y)!}{r!}$

C. $(x+y)C_{r}$

D. $(xy)C_{r}$

Answer: C

Watch Video Solution

103. $C_0 - C_1 + C_2 - C_3 + \ldots + (-1)^n C_n$ is equal to

A. $(2n)C_n$

B. $(-1)^n(2n)C_n$

C. $(-1)^n . 2nC_{n-1}$

D. none of these

Answer: D

Watch Video Solution

104. If $\left(1 + x + x^2\right)^n = a_0 + a_1 x + a_2 x^2 + \ldots + a_{2n} x^{2n}$,

then $a_0 + a_2 + a_4 + \ldots + a_{2n}$ equals

A. $\frac{3^n - 1}{2}$

B. $\frac{3^n+1}{2}$

C. $3^n+\frac{1}{2}$

D. $3^n-\frac{1}{2}$

Answer: B

Watch Video Solution

105. If x^r occurs in the expansion of $\left(x+\frac{1}{x}\right)^n$, then is coefficient is

A. ((n) !)/((r !)^(2))

B. $\frac{(n)!}{(r+1)!.(r-1)!}$

C. $\frac{(n)!}{\left(\frac{n+r}{2}\right)!\left(\frac{n-r}{2}\right)!}$

D. $\left(\frac{n!}{\left(\frac{r}{2}\right)!}\right)^2$

Answer: C

Watch Video Solution

106. If $(1+x)^n = C_0 + C_1.\, x + C_2.\, x^2 + \ldots C_n.\, x^n$ in the usual notation then $C_0^2 + C_1^2 + C_2^2 + \ldots + C_n^2$=

A. 1) $\frac{(2n)!}{n!}$

B. 2) $2n$

C. 3)(2 n) !/(n !)^(2)

D. 4)2^(n-1)

Answer: C

Watch Video Solution

107. $nC_r + 2.\ nC_{r-1} + nC_{r-2} =$

A. $\begin{pmatrix} 50 \\ 50 \end{pmatrix}$

B. (50)^(50)

C. 2^(100)

D. 2^(50)

Answer: A

Watch Video Solution

108. If the coefficients of r^{th} and $(r+1)^{th}$ term in the expansion of $(1+x)^n$ are equal then n=

A. 1: 3

B. 2: 5

C. 3: 6

D. 4: 8

Answer: C

Watch Video Solution

109. Sum of the odd binomial coefficients of $(1+x)^{50}$ is

A. 2^{50}

B. $2^{50}-1$

C. 2^{49}

D. none of these

Answer: C

Watch Video Solution

110. If $\left(1+x+x^2\right)^n = a_0 + a_1 x + a_2 x^2 + \ldots + a_{2n} x^{2n}$ then the value of $a_0 + a_3 + a_6 + \ldots$ is

A. (3^(n)-1)/(2)

B. (3^(n)+1)/(2

C. 3^(n)+(1)/(2

D. 3^(n)-(1)/(2)

Answer: B

Watch Video Solution

111. The coefficient of the term independent of x in the expansion of $\left(\sqrt{\frac{x}{3}} + \frac{3}{2x^2}\right)^{10}$ is

A. (9)/(4)

B. (3)/(4)

C. (5)/(4)

D. (7)/(4)

Answer: C

Watch Video Solution

112. If $C_0, C_1, C_2, \ldots, C_n$ are binomial coefficients of order n, then the value of $\frac{C_1}{2} + \frac{C_2}{4} + \frac{C_3}{6} + \ldots =$

A. (2^(n)+1)/(n-1)

B. (2^(n))/(n+1)

C. (2^(n)+1)/(n+1)

D. (2^(n)-1)/(n+1)

Answer: D

Watch Video Solution

113. The sum of the coefficients in the expansion of $\left(1+x-3x^2\right)^{3148}$

A. 8

B. 7

C. 1

D. -2

Answer: C

Watch Video Solution

114. The middle term in the expansion of $\left(\frac{x-(1)}{x}\right)^{18}$ is...

A. 18 C_(9)

B. -18 C_(9)

C. 18 C_(18)

D. -18 C_(10)

Answer: B

Watch Video Solution

115. If the value of $C_0 + 2C_1 + 3C_2 + \ldots + (n+1)C_n = 576$, then n is

A. 7

B. 8

C. 9

D. 10

Answer: A

Watch Video Solution

116. The ninth term of the expansion $\left((3x)\frac{-1}{2x}\right)^8$ is

A. (-1)/(512 x^(9))

B. (1)/(512 x^(9))

C. (1)/(256 x^(8))

D. (-1)/(256 x^(8))

Answer: C

Watch Video Solution

117. The coefficient of x^5 in $\left(1+x^2\right)^5(1+x)^4$ is

A. 20

B. 30

C. 60

D. 55

Answer: C

Watch Video Solution

118. If the coefficient of the r^{th} term and the $(r+1)^{th}$ term is the expansion of $(1+x)^{20}$ are in the ratio $1:2$ then r=

A. 1)6

B. 2)7

C. 3)8

D. 4)9

Answer: B

Watch Video Solution

119. The co-efficient of x^{-9} in the expansion of $\left(\frac{x^2}{2} - \frac{2}{x}\right)^9$ is

A. 512

B. -512

C. 521

D. 251

Answer: B

Watch Video Solution

120. Let $\left(1+x^2\right)^2(1+x)^n=\sum_{k=0}^{n+4} a_k x^k$. If a_1, a_2, a_3 are in A.P., then n=

A. 6

B. 5

C. 7

D. 2,3,4

Answer: D

Watch Video Solution

121. If in the expansion of $(1+x)^m(1-x)^n$ the coefficients of x and x^2 are 3 and -6 respective then m is

A. 1: 6

B. 2: 9

C. 3: 12

D. 4: 24

Answer: C

Watch Video Solution

122. The term independent of x in the expansion of $\left(x^2-\frac{1}{x}\right)^6$ is

A. $56\left(\frac{1-t}{1+t}\right)^3$

B. $56\left(\frac{1+t}{1-t}\right)^3$

C. $70\left(\frac{1-t}{1+t}\right)^4$

D. $70\left(\frac{1+t}{1-t}\right)^4$

Answer: C

Watch Video Solution

123. $\sum_{r=0}^{m}(n+r)C_n =$

A. 1: $100C_{51}$

B. 2: $100C_{52}$

C. 3: $-100C_{53}$

D. 4 : $100C_{54}$

Answer: C

Watch Video Solution

124. If $\left(1+2x+x^2\right)^n = \sum_{r=0}^{2n} a_r x^r$, then a_r=

A. $(nC)^2$

B. $nC_r . nC_{r+1}$

C. $2nCr$

D. $2nC_{r+1}$

Answer: C

Watch Video Solution

125. $\frac{C_0}{1} - \frac{C_1}{2} + \frac{C_2}{3} + \ldots + \frac{(-1)^n}{n+1}.\ C_n =$

A. 1) $\frac{n}{n+1}$

B. 2) $\frac{1}{n+1}$

C. 3) $\frac{2^n}{n+1}$

D. 4) $\frac{2^n - 1}{n+1}$

Answer: B

Watch Video Solution

126. The value of

$C_1 + 4C_2 + 7C_3 + \ldots + (2n-2)C_n$ is

A. $(3n-4).\ 2^{n+1}$

B. $(3n-4).\ 2^{n-1} + 2$

C. $(3n-4).2^n$

D. $(3n-4).2^{n-1}+1$

Answer: B

Watch Video Solution

127. If T, denotes the r^{th} term in the expansion of $\left(x+\frac{1}{y}\right)^{23}$ then

A. $T_{12}=T_{13}$

B. $x^2.T_{13}=T_{12}$

C. $T_{12}=x^2-T_{13}$

D. $T_{12}+T_{13}=25$

Answer: B

Watch Video Solution

128. If $C_0, C_2, C_4 \ldots$ are the binomial coefficients in the expansion of $(1+x)^9$ then

$C_0 + C_2 + C_4 + C_6 + C_8$=

A. 1) 2^7

B. 2)256

C. 3) 2^9

D. 4)258

Answer: B

Watch Video Solution

129. The largest term in the expansion of $(3+2x)^{50}$ where $x=\frac{1}{5}$ is:

A. $4^{th}term$

B. $5^{th}term$

C. $6^{th}term$

D. $7^{th}term$

Answer: C

Watch Video Solution

130. If $\left(1+x+x^2\right)^n = \sum_{r=0}^{2n} a_r . x^r$ then

$a_1 - 2a_2 + 3a_3 - .. - 2n . a_{2n} =$

A. a)0

B. b)1

C. c) n

D. d) $-n$

Answer: D

Watch Video Solution

131. If C_n is the coefficient of x^n in the expansion of $(1+x)^n$ then $C_1 + 2.\ C_2 + 3.\ C_3 + \ldots + n.\ C_n$

A. 2^n

B. $n.\ 2^n$

C. $n.\ 2^{n+1}$

D. $n.\ 2^{n-1}$

Answer: D

Watch Video Solution

132. Term independent of x in $\left(2x^2 + \frac{3}{x^3}\right)^{15}$ is

A. 1) $15C_9 . 2^8 . 3^7$

B. 2) $-15C_9 . 2^{10} . 3^5$

C. 3) $15C_9 . 2^{15}$

D. 4) $15C_9 . 3^6 . 2^9$

Answer: D

Watch Video Solution

133. The coefficients of the middle term in the expansion of $(1+x)^{40}$ is

A. $\frac{1.3.5..39}{20!}.2^{20}$

B. $\frac{1.3.5...39}{20!}$

C. $\frac{40!}{20!}$

D. 40 ! 2^(20)

Answer: A

Watch Video Solution

134. The term independent of x in the expansion of $\left(x^2-\frac{1}{x}\right)^6$ is

A. 1: -12

B. 2: 15

C. 3: 24

D. 4: -15

Answer: B

Watch Video Solution

135. The coefficients of x^{-n} in $(1+x)^n\left(1+\frac{1}{x}\right)^n$ is

A. 1: 0

B. 2: 1

C. 3: $2n$

D. 4: $2nC_n$

Answer: B

Watch Video Solution

136. The sum of the coefficients in the expansion of $\left(1+x-3x^2\right)^{171}$ is

A. 1: 0

B. 2: 1

C. 3: -1

D. 4: 2

Answer: C

Watch Video Solution

137. If $(1+x)^n = C_0 + C_1.x + C_2.x^2 + .. + C_n.x^n$ then $C_0 + 2.C_1 + 3.C_2 + .. + (n+1).C_n =$

A. $2^n + n.2^{n-1}$

B. $2^{n-1} + n.2^n$

C. $2^t + (n+1)2^n$

D. $2^{''}.1 + (n-1)2^n$

Answer: A

Watch Video Solution

138. In the expansion of $(1+x)^n$ the coefficients of pth and $(p+1)^{th}$ terms are respectively p and q then $p+q=$

A. n

B. $n+1$

C. $n+2$

D. $n+3$

Answer: B

Watch Video Solution

139. The coefficient of x^5 in the expansion of $\left(x^2-x-2\right)^5$ is

A. 1) -83

B. 2) -82

C. 3) -81

D. 4) 0

Answer: C

Watch Video Solution

140. The first three terms in the expansion of $(1+ax)^{n\neq 0}$ are $1, 6x, 16x^2$. Then the values of a and n are respectively.

A. 2 and 9

B. 3 and 2

C. $\frac{2}{3}$ and 9

D. $\frac{3}{2}$ and 6

Answer: C

Watch Video Solution

141. The coefficient of x^n in the expansion of $(1+x)(1-x)^n$ is

A. $(-1)^{a-1}.(n-1)^2$

B. $(-1)^n(1-n)$

C. $n-1$

D. $(-1)^{n-1}.n$

Answer: B

Watch Video Solution

142. The coeffient of the middle term in the binomial expansion in powers of x of $(1+\alpha x)^4$ and of $(1-\alpha x)^6$ is the same of α equals:

A. $-\frac{5}{3}$

B. $\frac{10}{3}$

C. $-\frac{3}{10}$

D. $\frac{3}{5}$

Answer: C

Watch Video Solution

143. The number of integral terms in the expansion of $\left(\sqrt{3}+\sqrt[8]{5}\right)^{256}$ is

A. 35

B. 32

C. 33

D. 34

Answer: C

Watch Video Solution

144. If the coefficient of rth, (r+1)th and (r+2)th terms in the binomial expansion of $(1+y)^m$ are in A.P. then m and r satisfy the equation:

A. $m^2 - m(4r-1) + 4r^2 + 2 = 0$

B. $m^2 - m(4r+1) + 4r^2 - 2 = 0$

C. $m^2 - m(4r+1) + 4r^2 + 2 = 0$

D. $m^2 - m(4r-1) + 4r^2 - 2 = 0$

Answer: B

Watch Video Solution

145. If the coefficient of x^7 in $\left[ax^2 + \left(\frac{1}{bx}\right)\right]^{11}$ equals the coefficient of x^{-7} in $\left[ax - \left(\frac{1}{bx^2}\right)\right]^{11}$, then a and b satisfy the relation:

A. $a - b = 1$

B. $a + b = 1$

C. $\frac{a}{b} = 1$

D. $ab = 1$

Answer: D

Watch Video Solution

146. Let $n \geq 5$ and $b \neq 0$. In the binomial expansion of $(a - b)^n$, the sum of the 5^{th} and 6^{th} terms is zero. Then a/b

equals

A. $\frac{n-5}{6}$

B. $\frac{n-4}{5}$

C. $\frac{5}{n-4}$

D. $\frac{6}{n-5}$

Answer: B

Watch Video Solution

147. The coefficient of x^{53} is $\sum_{r=0}^{100} 100C_r . (x-3)^{100-r} . 2^r$ is

A. $100C_{51}$

B. $100C_{52}$

C. $-100C_{53}$

D. $100C_{54}$

Answer: C

Watch Video Solution

148. If in the expansion of $(1+x)^m(1-x)^n$ the coefficients of x and x^2 are 3 and -6 respective then m is

A. 6

B. 9

C. 12

D. 21

Answer: C

Watch Video Solution

149. Coefficient of t^{24} in $\left(1+t^2\right)^{12}\left(1+t^{12}\right)\left(1+t^{24}\right)$ is:

A. $12C_6+3$

B. $12C_6+2$

C. $12C_6+1$

D. $12C_6$

Answer: B

Watch Video Solution

150. In the expansion of $(1+x)^{50}$, the sum of the coefficients of odd powers of x is :

A. zero

B. 2^{49}

C. 2^{50}

D. 2^{51}

Answer: B

Watch Video Solution

151. Given the integers $r > 1, n > 2$ and coefficients of (3r)th and (r+2)nd terms in the binomial expansion of $(1+x)^{2n}$ are equal, then:

A. $n = 2r$

B. $n = 3r$

C. $n = 2r + 1$

D. none of these

Answer: A

Watch Video Solution

152. The coefficient of the term independent of x in the expansion of $\left(\sqrt{\frac{x}{3}}+\frac{3}{2x^2}\right)^{10}$ is

A. $\frac{5}{4}$

B. $\frac{7}{4}$

C. $\frac{9}{4}$

D. none of these

Answer: A

Watch Video Solution

153. The coefficient of x^4 in the expansion of $\left(\frac{x}{2}-\frac{3}{x^2}\right)^{10}$ =

A. $\frac{405}{256}$

B. $\frac{504}{259}$

C. (450)/(263)

D. none of these

Answer: A

Watch Video Solution

154. In the expansion of $(1+x)^n$, coefficients of 2^{nd} 3^{rd} and 4^{th} terms are in A.P., then n=

A. 1)7

B. 2)9

C. 3)11

D. 4)none of these

Answer: A

Watch Video Solution

155. The coefficients of x in the expansion of $\left(x^2+\frac{c}{x}\right)^5$ is equal to

A. 1) $10c$

B. 2) $20c$

C. 3) $10c^3$

D. 4) $20c^3$

Answer: C

Watch Video Solution

156. The total number of terms in the expansion of $(x+y)^{100}+(x-y)^{100}$ after simplification

A. 51

B. 50

C. 202

D. none of these

Answer: A

Watch Video Solution

157. If the coefficients of r^{th} and $(r+1)^{th}$ terms in the expansion of $(3+7x)^{29}$ are equal, the $r$is equal to

A. 1: 15

B. 2: 21

C. 3: 24

D. 4: 14

Answer: B

Watch Video Solution

158. If $\left(1+x-2x^2\right)^6 = 1 + a_1x + a_zx^2 + l... + a_{12}x^{12}$ then $a_2 + a_4 + .. + a_{12}$=

A. 31

B. 32

C. 64

D. 1024

Answer: A

Watch Video Solution

159. If the sum of the coefficients in the expansion of $(x+y)^n$ is 1024, then the value of the greatest coefficient in the expansion is

A. 356

B. 252

C. 210

D. 120

Answer: B

Watch Video Solution

160. The coefficient of $\frac{1}{x}$ in the expansion of $\left(\frac{1}{x}+1\right)^n(1+x)^n$ is

A. $2nC_n$

B. $2nC_{n-1}$

C. $2nC_1$

D. nC_{n-1}

Answer: B

Watch Video Solution

161. Coefficient of x in the expansion of $\left(x^2+\frac{a}{x}\right)^5$

A. $9a^2$

B. $10a^3$

C. $10a^2$

D. $10a$

Answer: B

Watch Video Solution

162. In the expansion of $\left(x^2+\frac{2}{x}\right)^n$ for positive integer n has a term independent of x, then n is

A. 23

B. 18

C. 16

D. 0

Answer: B

Watch Video Solution

163. Let $\left(1+x^2\right)^2(1+x)^n=\sum_{k=0}^{n+4} a_k x^k$. If a_1, a_2, a_3 are in A.P., then n=

A. 1)6

B. 2)5

C. 3)7

D. 4)2,3,4

Answer: D

Watch Video Solution

164. The value of

$C_0 + 3C_1 + 5C_2 + 7C_3 + \ldots + (2n+1)C_n$ is:

A. 2^n

B. $2^n + n.\, 2^{n-1}$

C. $2^n.\,(n+1)$

D. none of these

Answer: C

Watch Video Solution

165. The largest term in the expansion of $(3+2x)^{50}$ where $x=\frac{1}{5}$ is:

A. $5^{th}, 6^{th}$

B. 51^{st}

C. $6^{th}, 7^{6}$

D. $7^{th}, 8^{th}$

Answer: C

Watch Video Solution

166. The value of

$$\binom{30}{0}\binom{30}{10}+\binom{30}{1}\binom{30}{11}+\binom{30}{2}\binom{30}{12}+\cdots\binom{30}{20}\binom{30}{30}$$

is:

A. $30C_{11}$

B. $60C_{10}$

C. $30C_{10}$

D. $65C_{55}$

Answer: C

Watch Video Solution

167. The positive integer just greater than,

$(1+0.0001)^{10000}$ is

A. 3

B. 4

C. 5

D. none of these

Answer: A

Watch Video Solution

168. In the binomial expansion of $(a-b)^n, n \geq 5$, the sum of the 5th and 6th terms is zero. Then $\frac{a}{b}$ equals:

A. $\frac{n-5}{6}$

B. $\frac{n-4}{5}$

C. $\frac{5}{n-4}$

D. $\frac{6}{n-5}$

Answer: B

Watch Video Solution

169. The sum of series:

$^{20}C_0 - {}^{20}C_1 + {}^{20}C_2 - {}^{20}C_3 + \ldots + {}^{20}C_{10}$ is:

A. 0

B. $20C_{10}$

C. $-20C_{10}$

D. $\frac{1}{2}20C_{10}$

Answer: D

Watch Video Solution

170. If the coefficient of x^7 in the expansion of $\left(ax^2 + b^{-1}x^{-1}\right)^{11}$ is equal to the coefficient of x^{-7} in $\left(ax - b^{-1}x^{-2}\right)^{11}$, then ab equals:

A. 1

B. 2

C. 3

D. 4

Answer: A

Watch Video Solution

171. The remainder left out when $8^{2n} - (62)^{2n+1}$ is divided by 9 is

A. 0

B. 2

C. 7

D. 8

Answer: B

Watch Video Solution

172. The coefficient of x^7 in the expansion of $\left(1-x-x^2+x^3\right)^6$ is:

A. 132

B. 144

C. -132

D. -144

Answer: D

Watch Video Solution

173. The term independent of x in the expression of $(1+x+2x^3)\left(\frac{3}{2}x^2-\frac{1}{3x}\right)^9$ is:

A. $\frac{1}{3}$

B. $\frac{19}{54}$

C. $\frac{17}{54}$

D. $\frac{1}{4}$

Answer: C

Watch Video Solution

174. In the expansion of $\left(x+\sqrt{x^2-1}\right)^6+\left(x-\sqrt{x^2-1}\right)^6$ the number of terms is

A. 7

B. 14

C. 6

D. 4

Answer: D

Watch Video Solution

175. The coefficient of x^6 in the expansion of $\left(1+x+x^2\right)^{-3}$ is

A. 6

B. 5

C. 4

D. 3

Answer: D

Watch Video Solution

176. The coefficient of x^4 in the expansion of $\left(\frac{x}{2}-\frac{3}{x^2}\right)^{10}=$

A. $\frac{405}{256}$

B. $\frac{504}{259}$

C. $\frac{450}{263}$

D. none of these

Answer: A

Watch Video Solution

177. The coefficient of the middle term in the expansion of $(1+x)^{2n}$ is

A. $\frac{1.3.5....(2n-1)}{n!}2^n$

B. $\frac{1.3.5...(2n-1)}{(n!)^2}2^n$

C. $\frac{(2n)!}{(n!)^2}2^n$

D. none of these

Answer: A

Watch Video Solution

178. The greatest coefficient in the expansion of $(1+x)^{10}$ is

A. $\frac{10!}{5!.6!}$

B. $\frac{10!}{(51)^2}$

C. $\frac{10!}{5!.\,7!}$

D. none of these

Answer: B

Watch Video Solution

179. If the second term in the expansion $\left((a)^{\frac{1}{13}}+\frac{a}{\sqrt{a^{-1}}}\right)^n$ is $14a^{\frac{5}{2}}$ then the value of $\frac{nC_3}{nC_2}$ is

A. 4

B. 3

C. 12

D. 6

Answer: A

Watch Video Solution

180. The coefficient of x^{20} in $\left(1+3x+3x^2+x^3\right)^{20}$ is

A. $60C_{40}$

B. $30C_{20}$

C. $15C_2$

D. none of these

Answer: A

Watch Video Solution

181. The greatest term in the expansion of $(1+3x)^{54}$, when $x=\frac{1}{3}$ is

A. A) 28^{th}

B. B) 25^{th}

C. C) 26^{th}

D. D) 24^{th}

Answer: A

Watch Video Solution

182. The sum of the last eight coefficients in the expansion of $(1+x)^{15}$ is

A. 2^{16}

B. 2^{15}

C. 2^{14}

D. none of these

Answer: C

Watch Video Solution

183. If $C_0, C_1, C_2, C_3, \ldots, C_n$ are the binomial coefficients in the expansion of $(1+x)^n$, then $\frac{C_0}{1} + \frac{C_2}{3} + \frac{C_4}{5} + \frac{C_6}{7} + \ldots\ldots =$

A. 1) $\frac{2^{n+1}}{n+1}$

B. 2) $\frac{2^{n+1}-1}{n+1}$

C. 3) $\frac{2^n}{n+1}$

D. 4)none of these

Answer: C

Watch Video Solution

184. Greatest term in the expansion of $\sqrt{3}\left(1+\frac{1}{\sqrt{3}}\right)^{20}$ is

A. $\frac{25840}{9}$

B. $\frac{24840}{9}$

C. $\frac{26840}{9}$

D. none of these

Answer: A

Watch Video Solution

185. The term independent of x in expansion of $\left(\frac{x+1}{x^{2/3}-x^{1/3}+1}-\frac{x-1}{x-x^{1/2}}\right)^{10}$ is:

A. 210

B. 105

C. 70

D. 112

Answer: A

Watch Video Solution

186. The coefficient of x^4 in $\left(\frac{x}{2}-\frac{3}{x^2}\right)^{10}$ is

A. $\frac{405}{226}$

B. $\frac{504}{289}$

C. $\frac{450}{263}$

D. none of thcse

Answer: D

Watch Video Solution

187. The greatest coefficient in the expansion of

$(1+x)^{2n}$ is

A. $2nC_N$

B. $2nC_{n-t}$

C. $2nC_{n+1}$

D. $2nC_{2n-1}$

Answer: A

Watch Video Solution

188. If the coefficients of r^{th} and $(r+1)^{th}$ terms in the expansion of $(3+7x)^{29}$ are equal, the $r$is equal to

A. 15

B. 21

C. 14

D. none of these

Answer: B

Watch Video Solution

189. The coefficient of x^5 in the expansion of $\left(1+x^2\right)^5.(1+x)^4$ is

A. 30

B. 40

C. 60

D. none of these

Answer: B

Watch Video Solution

190. The coefficient of $x^{-10} \in \left(x^2-\frac{1}{x^3}\right)^{10}$ is

A. -252

B. 210

C. $-5!$

D. -120

Answer: B

Watch Video Solution

191. The approximate value of $(1.0002)^{3000}$ is

A. 1.6

B. 1.4

C. 1.8

D. 1.2

Answer: A

Watch Video Solution

192. If $\left(1+x+x^2\right)^n = \sum_{r=0}^{2n} a_r . x^r$ then

$a_1 - 2a_2 + 3a_3 - .. - 2n . a_{2n} =$

A. 0

B. n

C. $-n$

D. $2n$

Answer: C

Watch Video Solution

193. The coefficient of x^5 in the expansion of $\left(x^2 - x - 2\right)^5$ is

A. -83

B. -82

C. -81

D. 0

Answer: C

Watch Video Solution

194. The total number of terms in the expansion of $(x + y)^{100} + (x - y)^{100}$ after simplification

A. 100

B. 50

C. 51

D. 202

Answer: C

Watch Video Solution

195. In the binomial expansion of $(1+x)^{15}$, the coefficients of x^r and x^{r+3} are equal. Then r is

A. 6

B. 4

C. 7

D. 8

Answer: A

Watch Video Solution

196. If (n) is an odd positive integer and

$$\left(1+x+x^2+x^3\right)^n=\sum_{r=0}^{3n} a_r x^r$$ then,

$a_0-a_1+a_2-a_3+\ldots-a_{3n}=$

A. 4°

B. 1

C. -1

D. 0

Answer: D

Watch Video Solution

197. If $r^{th}(r+1)^{th}$ terms in the expansion of $(p+q)^n$ are equal ,then $\frac{(n+1)q}{r(p+q)}$ is

A. 0

B. 1

C. $\frac{1}{4}$

D. $\frac{1}{2}$

Answer: B

Watch Video Solution

198. If x^r occurs in the expansion of $\left(x+\frac{1}{x}\right)^n$, then is coefficient is

A. $\frac{n!}{(r!)^2}$

B. $\frac{n!}{(r+1)!(r-1)!}$

C. $\frac{n!}{\left(\frac{n+r}{2}\right)!\left(\frac{n-r}{2}\right)!}$

D. $\frac{n!}{\left(\left(\frac{r}{2}\right)\right)^2}$

Answer: C

Watch Video Solution

199. If $nC_1 + 2.\, nC_2 + \ldots n.\, nC_n = 2n^2$, then n=

A. 4

B. 7

C. 3

D. 1

Answer: A

Watch Video Solution

200. If $\left(1+x+x^2\right)^n = a_0 + a_1 x + a_2 x^2 + \ldots + a_{2n} x^{2n}$,

then $a_0 + a_2 + a_4 + \ldots + a_{2n}$ equals

A. $\frac{3^n - 1}{2}$

B. $\frac{3^n + 1}{2}$

C. $\frac{2.\,3^n - 1}{2}$

D. (2. 3^(n)+1)/(2) `

Answer: B

Watch Video Solution