MATHS

BOOKS - DEEPTI MATHS (TELUGU ENGLISH)

BINOMIAL THEOREM

EXAMPLES

1. The coefficient of x^{-6} in $\left(x^4 - \frac{1}{x^2}\right)^{15}$ is

A. 1365

B. -1365

C. 1315

D. -1315

Answer: B

Watch Video Solution

2. The term independent of x in $\left(\frac{4x^2}{3} - \frac{3}{2x}\right)^9$ is

A. 3264

B. 2268

C. 1985

D. 2146

Answer: B

Watch Video Solution

3. If the coefficient of x^7 and x^8 in $(2 + x/3)^n$ are equal then $n =$

Watch Video Solution

4. The sum of the coefficient of odd powers of x in the expansion of $\left(1+x+x^2\right)^{15}$ is

A. $\frac{3^{15}+1}{2}$

B. $\frac{3^{15}-1}{2}$

C. $\frac{3^{15}}{2}$

D. none

Answer: B

Watch Video Solution

5. If the number of terms in the expansion of $\left(2^{1/3}x+3^{-1/3}y+2z\right)^n$ is 78, then $n=$

A. 9

B. 10

C. 11

D. 12

Answer: C

Watch Video Solution

6. If $\frac{1}{1!9!}+\frac{1}{3!7!}+\frac{1}{5!5!}+\frac{1}{7!3!}+\frac{1}{9!1!}=\frac{2^n}{10!}$, then $n=$

A. 3

B. 5

C. 7

D. 9

Answer: D

Watch Video Solution

7. If $0<x<1$, the first negative term in the expansion of $(1+x)^{27/5}$ is

A. 5^{th} term

B. 6^{th} term

C. 7^{th} term

D. 8^{th} term

Answer: D

Watch Video Solution

8. The number of terms in the expansion of $\left(x^2+18x+81\right)^{15}$ is

A. 15

B. 16

C. 30

D. 31

Answer: D

Watch Video Solution

9. The greatest binomial coefficient of $\left(2x^{1/3}+3x^{-7/2}\right)^{31}$ is equal to the coefficient of x^kin the expansion of $(1+x)^{31}$. Then $k=$

A. 13,14

B. 14,15

C. 15,16

D. 16,17

Answer: C

View Text Solution

10. $1+\frac{1}{4}+\frac{1.4}{4.8}+\frac{1.4.7}{4.8.12}+\ldots.=$

A. $\sqrt{3}$

B. $\sqrt{4}$

C. $\sqrt{5}$

D. $\sqrt{6}$

Answer: B

Watch Video Solution

EXERCISE 1A (BINOMIAL THEOREM WITH INTEGRAL INDEX)

1. $(x/3+2/y)^4 =$

A. $\frac{x^4}{80}+\frac{8x^3}{25y}+\frac{8x^2}{3y^2}+\frac{16}{2y^4}$

B. $\frac{x^4}{80}+\frac{8x^3}{27y}+\frac{8x^2}{3y^2}+\frac{32x}{3y^3}+16$

C. $\frac{x^4}{81}+\frac{8x^3}{27}+\frac{8x^2}{3y^2}+\frac{32x}{3y^3}+\frac{16}{y^4}$

D. none

Answer: C

Watch Video Solution

2. The 6th term of $(2+x)^{10}$ is

A. ${}^{10}C_5 5^2 x^5$

B. ${}^{10}C_5 2^5 x^5$

C. ${}^{10}C_2 2^5 x^5$

D. ${}^{10}C_2 5^2 x^5$

Answer: B

Watch Video Solution

3. The 12th term of $(2x-1)^{13}$ is

A. $-{}^{13}C_2(2x)^2$

B. $-{}^{13}C_2(2x)^2$

C. $-{}^{12}C_3(2x)^2$

D. ${}^{12}C_3(2x)^2$

Answer: B

Watch Video Solution

4. The 4th term of $\left(x+\frac{2}{x^3}\right)^6$ is

A. ${}^6C_3(x)^3\left(\frac{2}{x^2}\right)^2$

B. ${}^6C_3(x)^3\left(\frac{2}{x^3}\right)^3$

C. ${}^6C_3(x)^2\left(\frac{2}{x^3}\right)^2$

D. ${}^6C_3(x)^2\left(\frac{2}{x^3}\right)^3$

Answer: B

Watch Video Solution

5. The 3rd term of $\left(3x-\frac{y^3}{6}\right)^4$ is

A. ${}^4C_2(3x)^2\left(-\frac{y^3}{6}\right)^2$

B. ${}^4C_2(3x)^2\left(-\frac{y^2}{6}\right)^2$

C. ${}^4C_2(3x)^3\left(-\frac{y^3}{6}\right)^2$

D. ${}^4C_2(3x)^3\left(-\frac{y^2}{6}\right)^2$

Answer: A

Watch Video Solution

6. The third term from the end in the expansion of $\left(\frac{3x}{5}-\frac{5}{2x}\right)^8$ is

A. $\frac{35451}{15x^4}$

B. $\frac{35455}{16x^4}$

C. $\frac{39372}{15x^4}$

D. $\frac{39375}{16x^4}$

Answer: D

Watch Video Solution

7. The ratio of 3rd and 4th terms of $\left(x + 2/3x^2\right)^7$ is

A. x^3

B. $3x^3$

C. $0.9x^3$

D. $0.3x^3$

Answer: C

Watch Video Solution

8. The first three terms in the expansion of $\left(1 + x + x^2\right)^{10}$ are

A. $1, 5x, 11x^2$

B. $1, 10x, 15x^2$

C. $1, 10x, 55x^2$

D. $1, 15x, 50x^2$

Answer: C

Watch Video Solution

9. The coefficient of the 8th term in the expansion of $(1+x)^{10}$ is

A. 120

B. 7

C. ${}^{10}C_8$

D. 210

Answer: A

Watch Video Solution

10. The coefficient of x^8 in $\left(3x^2+\frac{5}{x^3}\right)^9$ is

A. ${}^{9}C_2 3^7 5^2$

B. ${}^9C_2 4^5 5^2$

C. ${}^7C_2 4^7 5^2$

D. ${}^8C_2 3^7 4^2$

Answer: A

Watch Video Solution

11. The coefficient of x in $\left(x^2 + \frac{c}{x}\right)^5$ is

A. 20c

B. 10c

C. $10c^3$

D. $20c^3$

Answer: C

Watch Video Solution

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

A. $\frac{45}{64}$

B. $\frac{243}{128}$

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

D. $\frac{810}{512}$

Answer: C

Watch Video Solution

13. The coefficient of x^3 in $\left(\sqrt{x^5}+\frac{3}{\sqrt{x^3}}\right)^6$ is

A. 0

B. 120

C. 420

D. 540

Answer: D

Watch Video Solution

14. If x^r occurs in the expansion $\left(x+1/x^2\right)^{2n}$, then its coeff. Is

A. ${}^{2n}C_{2n-r}$

B. ${}^{2n}C_{2n/3}$

C. ${}^{2n}C_{(2n-r)/3}$

D. none

Answer: C

Watch Video Solution

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

A. 120

B. 30

C. 60

D. 55

Answer: C

Watch Video Solution

16. The coefficient of x^{24} in the expansion of $\left(1+x^2\right)^{12}\left(1+x^{12}\right)\left(1+x^{24}\right)$ is

A. ${}^{12}C_6$

B. ${}^{12}C_6+2$

C. ${}^{12}C_6+4$

D. ${}^{12}C_6+6$

Answer: B

Watch Video Solution

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

A. 0

B. 1

C. 2^n

D. ${}^{2n}C_n$

Answer: B

Watch Video Solution

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

A. $(n-1)$

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

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

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

Answer: D

Watch Video Solution

19. The coefficient of $a^{-6}b^4$ in the expansion of $\left(\frac{1}{a} - \frac{2b}{3}\right)^{10}$ is

A. $\frac{1120}{27}$

B. $\frac{1120}{9}$

C. $\frac{1220}{27}$

D. $\frac{1220}{9}$

Answer: A

Watch Video Solution

20. The coefficient of $x^2y^3z^4$ in $(ax - by + cz)^9$ is

A. $1260a^2b^3c^4$

B. $-1260a^2b^3c^4$

C. $1220a^2b^3c^4$

D. $-1220a^2b^3c^4$

Answer: B

Watch Video Solution

21. In the expansion of $(2x+y+3z)^{10}$, the coefficient of $x^2y^5z^3$ is

A. $\frac{10!}{2!5!3!} \times 108$

B. $\frac{10!}{3!4!5!}$

C. $\frac{10!}{2!4!3!}$

D. $\frac{10!}{2!4!5!}$

Answer: A

Watch Video Solution

22. The coefficient of x^5 in $\left(2 - x + 3x^2\right)^6$ is

A. 4692

B. -4692

C. 5052

D. -5052

Answer: D

Watch Video Solution

23. The coefficient of x^4 in $\left(1 + x + x^2 + x^3\right)^{11}$ is

A. 990

B. 780

C. 1040

D. 520

Answer: A

Watch Video Solution

24. Find the coefficient of x^7 in the expansion of $\left(1-x-x^2+x^3\right)^6$.

A. -144

B. 132

C. 144

D. -132

Answer: A

Watch Video Solution

25. The coefficient of x^4 in the expansion of $\left(1-x+x^2-x^3\right)^4$. Is

A. 31

B. 30

C. 25

D. -14

Answer: A

Watch Video Solution

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

A. ${}^{100}C_{51}$

B. ${}^{100}C_{52}$

C. $-{}^{100}C_{53}$

D. ${}^{100}C_{54}$

Answer: C

Watch Video Solution

27. Which term of $(ax + b/x)^{14}$ is independent of x?

A. 6

B. 7

C. 8

D. 9

Answer: C

Watch Video Solution

28. the term independent of x in $(x + 1/x)^6$ is

A. 5

B. 10

C. 15

D. 20

Answer: D

Watch Video Solution

29. If T_{r+1} is the term of independent of x in $\left(3x - \frac{5}{x^3}\right)^8$ then $r =$

A. 1

B. 2

C. 3

D. 4

Answer: B

Watch Video Solution

30. Which term of $\left(\sqrt{x/3} + 3/2x^2\right)^{10}$ is independent of x?

A. 2

B. 3

C. 4

D. 7

Answer: B

Watch Video Solution

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

A. -12

B. 15

C. 24

D. -15

Answer: B

Watch Video Solution

32. The term independent of x in $\left(ax+\frac{b}{x}\right)^{14}$ is

A. $14!A^7b^7$

B. $\frac{14!}{(7!)^2}a^7b^7$

C. $\frac{14!}{7!}a^7b^7$

D. $\frac{14!}{(17)^3}a^7b^7$

Answer: B

Watch Video Solution

33. The term of independent of x in $\left(x^2-\frac{1}{x}\right)^9$ is

A. 84

B. 96

C. 112

D. 125

Answer: A

Watch Video Solution

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

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

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

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

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

Answer: C

Watch Video Solution

35. The term independent of x in $\left(\frac{\sqrt{x}}{2} - \frac{2}{x^2}\right)^{10}$ is

A. $9/64$

B. $8/45$

C. $64/45$

D. $45/64$

Answer: D

Watch Video Solution

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

A. $\left({}^{18}C_9\right)2^{12}$

B. $\left({}^{18}C_6\right)2^{6}$

C. $\left({}^{18}C_6\right)2^{8}$

D. $-\left({}^{18}C_9\right)2^{9}$

Answer: D

Watch Video Solution

37. The term independent of x in the expansion of $\left(2x^2 - \frac{3}{x^3}\right)^{15}$ is

A. ${}^{15}C_2^8 3^7$

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

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

D. ${}^{15}C_9 3^6 2^9$

Answer: D

Watch Video Solution

38. The term independent of x in $\left(x^2 - 1/3x\right)^9$ is

A. $28/243$

B. $27/245$

C. $28/240$

D. $25/271$

Answer: A

Watch Video Solution

39. Independent term of $\left(\sqrt{x}-2/x\right)^{18}$ is

A. ${}^{18}C_6 2^6$

B. ${}^{18}C_5 2^5$

C. ${}^{16}C_6 2^6$

D. ${}^{16}C_6 2^5$

Answer: A

Watch Video Solution

40. The term independent of x in the expansion of $\left(\frac{2\sqrt{x}}{5}-\frac{1}{2x\sqrt{x}}\right)^{11}$ is

A. 5th term

B. 6th term

C. 8th term

D. 9th term

Answer: D

View Text Solution

41. The term independent of x in $\left(x - 1/x^2\right)^{3n}$ is

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

B. $\frac{(-1)^n(3n!)!}{n!}$

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

D. none

Answer: A

Watch Video Solution

42. The term independent of x in the expansion of $\left(1+x+2x^3\right)\left(3x^2/2-1/3x\right)^9$ is

A. $1/3$

B. $1/4$

C. $17/54$

D. $19/54$

Answer: C

Watch Video Solution

43. the tern independent of x in $\left(1+x+2x^2\right)\left(3x^2/2-1/3x\right)^9$ is

A. $7/18$

B. $5/18$

C. $7/11$

D. $4/7$

Answer: A

Watch Video Solution

44. The term independent of x $(x > 0, x \neq 1)$ in the expansion of $\left[\frac{(x+1)}{\left(x^{2/3}-x^{1/3}+1\right)}-\frac{(x-1)}{\left(x-\sqrt{x}\right)}\right]^{10}$ is

A. 105

B. 210

C. 315

D. 420

Answer: B

Watch Video Solution

45. If the absolute term (independent of x) in the expansion of $\left(\sqrt{x}-k/x^2\right)^{10}$ is 405 then $k=$

A. ± 4

B. ± 2

C. ± 3

D. ± 8

Answer: C

Watch Video Solution

46. The greatest value of the term independent of x, as α varies over R, in the expansion of $\left(x\cos\alpha+\frac{\sin\alpha}{x}\right)^{20}$ is

A. ${}^{20}C_{10}$

B. ${}^{20}C_{15}$

C. ${}^{20}C_{19}$

D. $^{20}C_{10}\left(\frac{1}{2}\right)^{10}$

Answer: D

View Text Solution

47. If T_r denotes the rth term in the expansion of $(x+1/y)^{23}$ then

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

B. $x^2T_{35}=T_{12}$

C. $T_{12}=xyT_{13}$

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

Answer: C

Watch Video Solution

48. Which of the following expansion will have term containing x^3 ?

A. $\left(x^{-1/5}+2x^{3/5}\right)^{25}$

B. $\left(x^{3/5}+2x^{-1/5}\right)^{24}$

C. $\left(x^{3/5}-2x^{-1/5}\right)^{23}$

D. $\left(x^{3/5}+2x^{-1/5}\right)^{22}$

Answer: A

View Text Solution

49. The number of terms which are free from radical signs in the expansion of $\left(y^{1/5}+x^{1/10}\right)^{55}$ is

A. 5

B. 6

C. 7

D. none

Answer: B

Watch Video Solution

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

A. 33

B. 34

C. 35

D. 32

Answer: A

Watch Video Solution

51. The sum of the rational terms in expansion of $\left(\sqrt{2}+3^{1/5}\right)^{10}$ is

A. 41

B. 230

C. 530

D. none

Answer: A

Watch Video Solution

52. the number of irrational terms in $\left(\sqrt[8]{5}+\sqrt[6]{2}\right)^{100}$ is

A. 97

B. 98

C. 96

D. 99

Answer: A

Watch Video Solution

53. The sum of the coefficient of x^{32} and x^{-17} in $\left(x^4-\frac{1}{x^3}\right)^{15}$ is

A. 0

B. 1365

C. -1365

D. 2720

Answer: A

Watch Video Solution

54. If $ab \neq 0$ and the sum of the coefficient of x^7 and x^4 in the expansion of $\left(\frac{x^2}{a} - \frac{b}{x}\right)^{11}$ zero, then

A. $a = b$

B. $a + b = 0$

C. $ab = -1$

D. $ab = 1$

Answer: D

Watch Video Solution

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

A. 0

B. 1

C. -1

D. 2

Answer: C

Watch Video Solution

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

A. $a - b = 1$

B. $a + b = 1$

C. $a / b = 1$

D. $ab = 1$

Answer: D

Watch Video Solution

57. In the binomial expansion of $(a - b)^n$, $n \geq 5$, the sum of 5th and 6th terms is zero, then

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

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

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

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

Answer: D

Watch Video Solution

58. If the coefficient of rth and $(r+1)th$ terms in the expansion of $(3+7x)^{29}$ are equal,

A. 14

B. 15

C. 18

D. 21

Answer: D

Watch Video Solution

59. If the coefficient of rth term and $(r+1)th$ term in the expansion of $(1+x)^{20}$ are in the ration $1:2$, then $r=$

A. 6

B. 7

C. 8

D. 9

Answer: B

Watch Video Solution

60. If in the expansion of $(1-x)^{2n-1}$, the coefficient of x^r is denoted by a_r then $a_{r-1} + a_{2n-r} =$

A. 0

B. 1

C. -1

D. 2

Answer: A

Watch Video Solution

61. If the second term in the expansion $\left(\sqrt[13]{a}+\frac{a}{\sqrt{a^{-1}}}\right)^{n}$ is $14a^{5/2}$, then the value of $\frac{{}^{n}C_{3}}{{}^{n}C_{2}}$ is

A. 4

B. 3

C. 12

D. 6

Answer: A

Watch Video Solution

62. If the coefficient of x in $\left(x^{2}+k/x\right)^{5}$ is 270 then $k=$

A. 0

B. 1

C. 3

D. 2

Answer: C

Watch Video Solution

63. If the coefficient of x^2 and x^3 in $(3+kx)^9$ are equal then $k=$

A. $9/7$

B. $7/9$

C. $3/4$

D. $4/3$

Answer: A

Watch Video Solution

64. If the coefficient of x^7 and x^8 in $(2+x/3)^n$ are equal then $n=$

A. 45

B. 55

C. 35

D. 27

Answer: B

Watch Video Solution

65. If the coefficients of $(2r+1)th$ term and $(4r+5)th$ term in the expansion of $(1+x)^{10}$ are equal then $r=$

A. 1

B. 2

C. 3

D. 4

Answer: A

Watch Video Solution

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

A. ± 4

B. ± 2

C. ± 3

D. ± 8

Answer: B

Watch Video Solution

67. Prove that : If the coefficients of $(2r+4)^{\text{th}}$ and $(r-2)^{\text{nd}}$ terms in the expansion of $(1+x)^{18}$ are equal, find r.

A. 2

B. 4

C. 6

D. 8

Answer: C

Watch Video Solution

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

A. $1:32$

B. $32:1$

C. $1:16$

D. $16:1$

Answer: A

Watch Video Solution

69. The ratio of the coefficient of x^{10} in $\left(1-x^2\right)^{10}$ and the term of independent of x in $(x-2/x)^{10}$ is

A. $1:32$

B. $32:1$

C. $1:16$

D. $16:1$

Answer: A

Watch Video Solution

70. The two successive terms in the expansion $(1+x)^{24}$ whose coeff's are in the ratio $4:1$ are

A. ${}^{24}C_{19}x^{19}, {}^{24}C_{20}x^{20}$

B. ${}^{20}C_{15}x^{15}, {}^{20}C_{15}x^{10}$

C. ${}^{24}C_9x^{10}, {}^{24}C_9x^9$

D. none

Answer: A

Watch Video Solution

71. The coefficients of three consecutive terms in the expansion of $(1+x)^n$ are in the ratio $1:7:42$, then $n=$

A. 55

B. 60

C. 72

D. 63

Answer: A

Watch Video Solution

72. If the coefficients of 2nd, 3rd, 4th terms of $(1+x)^n$ are in A.P. then $n =$

A. 12

B. 5

C. 7

D. 9

Answer: C

Watch Video Solution

73. If the coefficients of 5th, 6th, 7th terms of $(1+x)^n$ are in A.P. then $n =$

A. 10

B. 12

C. 14

D. 15

Answer: C

Watch Video Solution

74. If the coefficients of x^9, x^{10}, x^{11} in the expansion of $(1+x)^n$ are in arithmetic progression then $n^2 = 41n =$

A. 398

B. 298

C. -398

D. 198

Answer: C

Watch Video Solution

75. If the coefficients of 2nd , 3rd and 4th terms of the expansion of $(1+x)^{2n}$ are in A.P. then the value of $2n^2 - 9n + 7$ is

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

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

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

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

Answer: B

Watch Video Solution

76. If 28, 56, 70 are the successive coefficients of $(1+x)^n$ then $n =$

A. 8

B. 9

C. 10

D. 11

Answer: A

Watch Video Solution

77. If the first three terms of $(1+ax)^n$ are $1, 6x, 16x^2$ then $(a, n) =$

A. $(2/3, 9)$

B. $(2/5, 8)$

C. $(3/2, 6)$

D. $(5/2, 3)$

Answer: A

Watch Video Solution

78. If the first three terms of $(a+b)^n$ are 1, 14, 84 respectively then $n =$

A. 5

B. 7

C. 9

D. 11

Answer: B

Watch Video Solution

79. If the 3rd, 4th and 5th terms of $(x+a)^n$ are 720, 1080 and 810 respectively then $(x, a, n) =$

A. $(2, 3, 5)$

B. $(3, 5, 7)$

C. $(5, 3, 7)$

D. $(2, 5, 3)$

Answer: A

Watch Video Solution

80. If the 3rd, 4th and 5th terms of $(x+a)^n$ are 60, 160, 240 respectively then $(x, a, n) =$

A. $(1, 2, 6)$

B. $(2, 1, 6)$

C. $(6, 2, 1)$

D. $(6, 1, 2)$

Answer: A

Watch Video Solution

81. If the 2nd and 3rd terms in the expansion of $(1+x)^n$ are $20a$ and $180a^2$ respectively then $(x, n) =$

A. $(2a, 10)$

B. $(3a, 8)$

C. $(3a, 12)$

D. $(4a, 7)$

Answer: A

Watch Video Solution

82. If the coefficients of x^3 and x^4 in the expansion of $(1 + ax + bx^3)(1 - 2x)^{18}$ in powers of x are both zero, then (a, b) is equal to

A. $\left(14, \frac{272}{3}\right)$

B. $\left(16, \frac{272}{3}\right)$

C. $\left(16, \frac{251}{3}\right)$

D. $\left(14, \frac{251}{3}\right)$

Answer: B

Watch Video Solution

83. 5th term of $\left(2x^2 + \frac{3}{x}\right)^5$ is 10. Then $x =$

A. ± 3

B. 3

C. ± 9

D. 9

Answer: C

Watch Video Solution

84. If the third time in the expansion of $\left(\frac{1}{x} + x\log_{10} x\right)$ 1 then $x =$

A. 1

B. 10

C. 100

D. $1/\sqrt{100}$

Answer: B

View Text Solution

85. If the fourth term in the expansion of $\left(\sqrt{x^{1/(\log x+1)}}+x^{1/12}\right)^6$ is equal to 200 and $x>1$ then $x=$

A. 100

B. 10

C. 1

D. $1/\sqrt{10}$

Answer: B

Watch Video Solution

86. If the 6th term in the expansion of $\left(\frac{1}{x^{8/3}}+x^2\log_{10}x\right)^8$ is 5600, then the value of $x=$

A. 100

B. 10

C. 1

D. $1/\sqrt{10}$

Answer: B

Watch Video Solution

87. If the third term in the expansion of $\left(\frac{1}{x}+x^{\log_{10}x}x\right)^5$ is 1000, then $x=$

A. 100

B. 10

C. 1

D. $1/\sqrt{10}$

Answer: A

View Text Solution

88. If the third term in the expansion of $(x + x\log_{10} x)^5$ is 10^6 then x is

A. 1

B. 10

C. 10^2

D. 10^3

Answer: B

Watch Video Solution

89. If the ratio of the 7th term from the beginning to the 7th term from the end in the expansion of $\left(\sqrt{2} + \frac{1}{\sqrt{3}}\right)^x$ is $\frac{1}{6}$, then x is

A. 9

B. 6

C. 12

D. none of these

Answer: A

Watch Video Solution

90. If two consecutive terms in the expansion of $(x+a)^n$ are equal to where n is a positive integer then $\frac{(n+1)a}{x+a}$ is

A. a positive integer

B. a negative integer

C. an even integer

D. an odd integer

Answer: A

Watch Video Solution

91. If the coefficient of pth term in the expansion of $(1+x)^n$ is p and the coefficient of $(p+1)th$ term is q then $n=$

A. $p+q+1$

B. $p+q-1$

C. $p-q-1$

D. $p-q+1$

Answer: B

Watch Video Solution

92. If p and q are the coefficients of x^n in $(1+x)^{2n-1}$ and $(1+x)^{2n}$ respectively then $2p=$

A. q

B. 2

C. 1

D. 3

Answer: A

Watch Video Solution

93. If the 5th term is 4 times the 4th term and the 4th term is 6 times the 3rd in the expansion of $(1+x)^n$ then $(x, n) =$

A. $(2, 11)$

B. $(3, 10)$

C. $(11, 2)$

D. $(10, 3)$

Answer: A

Watch Video Solution

94. If a_1, a_2, a_3, a_4 are the coefficients of 2nd, 3rd, 4th and 5th terms of respectively in $(1+x)^n$ then $\frac{a_1}{a_1+a_2}+\frac{a_3}{a_3+a_4}=$

A. $\frac{a_2}{a_2+a_3}$

B. $\frac{2a_2}{a_2+a_3}$

C. $\frac{a_3}{a_2+a_3}$

D. $\frac{2a_3}{a_2+a_3}$

Answer: B

Watch Video Solution

95. If P and Q are the sum of odd terms and the sum of even terms respectively in the expansion of $(x+a)^n$ then prove that $P^2-Q^2=\left(x^2-a^2\right)^n$

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

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

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

D. $x^a - a^n$

Answer: B

Watch Video Solution

96. If the sum of odd terms and the sum of even terms in the expansion of $(x + a)^n$ are p and q respectively then $p^2 + q^2 =$

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

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

C. $\frac{1}{2}\left[(x + a)^{2n}\right]$

D. $\frac{1}{2}\left[(x + a)^{2n} + (x - a)^{2n}\right]$

Answer: C

Watch Video Solution

97. If P and Q are the sum of odd terms and the sum of even terms respectively in the expansion of $(x+a)^n$ then prove that $4PQ = (x+a)^{2n} - (x-a)^{2n}$

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

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

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

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

Answer: A

Watch Video Solution

98. The coefficient of x^p in the expansion of $\left(x^2 + \frac{1}{x}\right)^{2n}$ is

A. $\frac{(2n)!}{\frac{(4n-p)!}{3!} \cdot \frac{(2n-p)!}{3!}}$

B. $\frac{(2n)!}{\left(\frac{4n-p!}{3}\right)!. \left(\frac{2n+p!}{3}\right)!}$

C. $\frac{(2n)!}{\left(\frac{4n+p!}{3}\right)!.\left(\frac{2n-p!}{3}\right)!}$

D. $\frac{(2n)!}{\frac{(4n+p!)}{3!}.\frac{(2n+p!)}{3!}}$

Answer: B

Watch Video Solution

99. If $T_0, T_1, T_2, \ldots T_n$ represent the terms in the expansion of $(x+a)^n$, then the value of $(T_0 - T_2 + T_4 - T_6 + \ldots)^2 + (T_1 - T_3 + T_5 - \ldots.)^2$ is

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

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

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

D. none

Answer: B

Watch Video Solution

100. The expansion $\left[x+\left(x^3-1\right)^{1/2}\right]^5+\left[x-\left(x^3-1\right)^{1/2}\right]^5$ is a polynomial of degree

A. 5

B. 6

C. 7

D. 8

Answer: C

Watch Video Solution

101. If $\frac{1}{\sqrt{4x+1}}\left\{\left(1+\frac{\sqrt{4x+1}}{2}\right)^n-\left(1-\frac{\sqrt{4x+1}}{2}\right)^n\right\}=a_0+a_1x+\ldots+$, then $n=$

A. 11

B. 9

C. 10

D. none of these

Answer: A

Watch Video Solution

102. $\left(\sqrt{2}+1\right)^6+\left(\sqrt{2}-1\right)^6=$

A. $198\sqrt{2}$

B. $992\sqrt{2}$

C. 99

D. 198

Answer: D

Watch Video Solution

103. Larger of $99^{50} + 100^{50}$ and 101^{50}

A. $99^{50} + 100^{50}$

B. 101^{50}

C. can not be determined

D. none

Answer: B

Watch Video Solution

104. Larger of $199^{100} + 200^{100}$ and 201^{100} is

A. $199^{100} + 200^{100}$

B. 201^{100}

C. can not be determined

D. none

Answer: B

Watch Video Solution

105. $11^9 + 9^{11}$ is divided by

A. 9

B. 10

C. 11

D. 12

Answer: B

Watch Video Solution

106. If n is a positive integer then $11^n - 10n - 1$ is divided by

A. 90

B. 100

C. 110

D. 120

Answer: B

Watch Video Solution

107. If n is a positive integer then $49^n + 16n - 1$ is divided by

A. 64

B. 56

C. 72

D. 83

Answer: A

View Text Solution

108. The remainder when 2^{2000} is divided by 17 is

A. 1

B. 2

C. 8

D. none of these

Answer: A

Watch Video Solution

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

A. 2

B. 7

C. 8

D. 0

Answer: A

Watch Video Solution

110. If $\left(3+\sqrt{8}\right)^n - I + F$ where I_n are positive integer , $0 < F < 1$ then I is

A. any integer

B. an even integer

C. an odd integer

D. not determined

Answer: C

Watch Video Solution

111. If $\left(4+\sqrt{15}\right)^n = I + F$ when I, n are positive integers, $0 < F < 1$ then $(I+F)(1-F) =$

A. 0

B. 1

C. -1

D. 2

Answer: B

Watch Video Solution

112. If $\left(7+4\sqrt{3}\right)^n = I + F$ where I and n are +ve integers and F is +ve proper fraction, then $(I+F)(1-F) =$

A. 0

B. 1

C. -1

D. none of these

Answer: B

Watch Video Solution

113. Let $R = \left(5\sqrt{5} + 11\right)^{2n+1}$, $f = R - [R]$. Then $Rf =$

A. 1

B. 2^n

C. 2^{2n}

D. 4^{2n+1}

Answer: D

Watch Video Solution

114. If $\left(6\sqrt{6} + 14\right)^{2n+1} = R$ and $F = [R]$, where [R] denotes the greatest integer less than or equal to R thwn $RF =$

A. 4^{2n+1}

B. 4^{2n-1}

C. 20^{2n+1}

D. 20^{2n-1}

Answer: C

Watch Video Solution

115. If $R = \left(5 + \sqrt{21}\right)^{2n+1}$ and $f = R - [R]$, where [R] denotes the greatest integer less than or equal then $R(1 - f) =$

A. 4^{2n+1}

B. 4^{2n-1}

C. 20^{2n+1}

D. 20^{2n-1}

Answer: C

Watch Video Solution

116. Let $R = \left(2 + \sqrt{3}\right)^{2n}$ and $f = R - [R]$ where [ ] denotes the greatest integer function , then $R(1 - f) =$

A. 1

B. $2^2 n$

C. $2^{2n} - 1$

D. ${}^{2n}C_n$

Answer: A

Watch Video Solution

117. For natural numbers m, n if $(1 - y)^m (1 + y)^n = 1 + a_1 y + a_2 y^2 + \ldots,$ and $a_1 = a_2 = 10,$ then (m, n) is

A. $(45, 35)$

B. $(35, 45)$

C. $(20, 45)$

D. $(35, 20)$

Answer: B

Watch Video Solution

118. The middle term in the expansion of $\left(x + \frac{1}{x}\right)^{10}$ is

A. ${}^{10}C_6$

B. $-{}^{10}C_6$

C. $-{}^{10}C_5$

D. ${}^{10}C_5$

Answer: D

Watch Video Solution

119. The middle term of $(a/x - x/a)^{10}$ is

A. 252

B. 255

C. -255

D. -252

Answer: D

Watch Video Solution

120. Middle term in the expansion of $\left(2x - \frac{3}{x}\right)^{15}$ is

A. $-{}^{15}C_7 2^8 3^7 x$

B. ${}^{15}C_7 2^8 3^7 x$

C. $-{}^{15}C_6 2^8 x$

D. ${}^{15}C_6 2^8 3^7 x$

Answer: A

Watch Video Solution

121. The middle term of $\left(x+\frac{1}{x}\right)^{2n}$ is

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

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

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

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

Answer: A

Watch Video Solution

122. The middle terms of $\left(\frac{x^{3/2}y}{2}+\frac{2}{xy^{3/2}}\right)^{13}$ are

A. ${}^{13}C_6\frac{x^{9/2}}{2y^2}, {}^{13}C_7\frac{2x^2}{y^{9/2}}$

B. $^{13}C_7 \frac{x^{9/2}}{2y^2}, {}^{13}C_7 \frac{2x^2}{y^{9/2}}$

C. $^{13}C_7 \frac{x^{9/2}}{2y^2}, {}^{13}C_6 \frac{2x^2}{y^{9/2}}$

D. $^{13}C_6 \frac{x^{9/2}}{2y^2}, {}^{13}C_6 \frac{2x^2}{y^{9/2}}$

Answer: A

Watch Video Solution

123. The middle terms of $\left(3x^2 + 5/x^3\right)^{11}$ are

A. $^{11}C_5 \frac{3^6 5^6}{x^3}, {}^{11}C_6 \frac{3^6 5^5}{x^8}$

B. $^{11}C_5 \frac{3^5 5^6}{x^3}, {}^{11}C_6 \frac{3^5 5^6}{x^8}$

C. $^{11}C_5 \frac{3^5 5^6}{x^3}, {}^{11}C_6 \frac{3^6 5^5}{x^8}$

D. $^{11}C_5 \frac{3^6 5^5}{x^3}, {}^{11}C_6 \frac{3^5 5^6}{x^8}$

Answer: D

Watch Video Solution

124. The middle term of $\left(1-3x+3x^2-x^3\right)^{2n}$ is

A. ${}^{6n}C_{3n}(-x)^{3n}$

B. ${}^{2n}C_{n}(-x)^{3n}$

C. ${}^{5}nC_{2n}(-x)^{3}n$

D. ${}^{4n}C_{3n}(-x)^{3n}$

Answer: A

Watch Video Solution

125. If the middle term of $(1+x)^{2n}$ is $\frac{1.3.5.\ldots(2n-1)k}{n!}$ then $k=$

A. $(3x)^{n+1}$

B. $(2x)^{n+1}$

C. $(2x)^{n}$

D. $(3x)^{n}$

Answer: C

Watch Video Solution

126. The greatest coefficient of $(1+x)^{10}$ is

A. $10!/5!6!$

B. $10!/(5!)^2$

C. $10!/5!7!$

D. none

Answer: B

Watch Video Solution

127. The greatest coeff. of $(x/y+y/x)^{2n+1}$ is

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

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

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

D. none

Answer: A

View Text Solution

128. The value of the greatest term in $\sqrt{3}\left(1+1/\sqrt{3}\right)^{20}$ is

A. $\frac{{}^{20}C_6}{25}$

B. $\frac{{}^{20}C_7}{27}$

C. $\frac{{}^{15}C_6}{23}$

D. none

Answer: B

Watch Video Solution

129. The coefficient of the middle term in the binomial expansion in powers of x of $(1+\alpha x)^4$ and $(1-\alpha x)^6$ is the same if $\alpha =$

A. $-5/3$

B. $3/5$

C. $-3/10$

D. $10/3$

Answer: C

Watch Video Solution

130. If the middle term in the expansion of $(1+x)^{2n}$ is the greatest term, then x lies in the interval

A. $\left(\frac{n}{x+1}, \frac{n+1}{n}\right)$

B. $\left(\frac{n+1}{n}, \frac{n}{n+1}\right)$

C. $(n-2, n)$

D. $(n-1, n)$

Answer: A

Watch Video Solution

131. Which term is the numerically greatest in $(1-3x)^{10}$ when $x = 1/2$?

A. 7

B. 6

C. 5

D. 8

Answer: A

Watch Video Solution

132. Which term of $(2x - 3y)^{12}$ when $x = 1, y = 5/2$ numerically greatest ?

A. 7

B. 8

C. 9

D. 11

Answer: D

Watch Video Solution

133. The numerically greatest term of $(3x + 2y)^{11}$ when $x = 2/3, y = 3/4$ is

A. ${}^{10}C_5 \times 486$

B. $-{}^{10}C_5 \times 486$

C. ${}^{11}C_5 \times 486$

D. $-{}^{11}C_5 \times 486$

Answer: C

Watch Video Solution

134. The numerically greatest term in the expansion of $(3+2x)^{49}$ when $x = 1/5$ is.....

A. 4th term

B. 5th term

C. 6th term

D. 7th term

Answer: C

View Text Solution

135. If the 4th term in the expansion of $(2+3x/8)^{10}$ has the maximum numerical value, then the range of values of x for which this will be true is

A. $\frac{64}{21} < x < -2$

B. $\frac{21}{64} < x < 2$

C. $-\frac{64}{21} < x < 2$

D. $-\frac{21}{64} < x < 2$

Answer: A

View Text Solution

136. The integral part of $\left(\sqrt{2}+1\right)^6$ is

A. 197

B. 196

C. 175

D. 176

Answer: A

Watch Video Solution

137. The positive integer which is just greater than $(1+0.0001)^{10000}$ is

A. 3

B. 4

C. 5

D. 6

Answer: A

Watch Video Solution

138. If n is a +ve integer, then the integral part of $\left(4+\sqrt{10}\right)^n$ is an ... integer

A. odd

B. even

C. odd or even

D. none

Answer: A

View Text Solution

139. $\frac{18^3 + 7^3 + 3.18.7.25}{3^6 + 6.243.2 + 15.81.4 + 20.27.8 + 15.9.16 + 6.3.32 + 64} =$

A. 0

B. 1

C. -1

D. none

Answer: B

Watch Video Solution

140. $(1.03)^{19} =$

A. 1.2529

B. 1.7250

C. 1.7215

D. 1.7535

Answer: D

View Text Solution

141. $(1.02)^{6} + (0.98)^{6} =$

A. 2.002

B. 2.102

C. 2.012

D. 2.21

Answer: C

View Text Solution

142. $\left(2-\sqrt{5}\right)^5+\left(2+\sqrt{5}\right)^5=$

A. 1360

B. 1364

C. 1373

D. 1374

Answer: B

Watch Video Solution

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

A. 9

B. 0

C. 5

D. 10

Answer: C

Watch Video Solution

144. The number of nonzero terms in the expansion of $(x+a)^{100}+(x-a)^{100}$ is

A. 100

B. 51

C. 201

D. 202

Answer: B

Watch Video Solution

145. The number of nonzero terms in the expansion of $\left(a+b\sqrt{2}\right)^{20}-\left(a-b\sqrt{2}\right)^{20}$ is

A. 20

B. 10

C. 11

D. 42

Answer: B

Watch Video Solution

146. The number of nonzero terms in the expansion of $\left(x+2\sqrt{2}\right)^{101}-\left(x-2\sqrt{2}\right)^{101}$ is

A. 101

B. 50

C. 51

D. 204

Answer: C

Watch Video Solution

147. The number of terms in the expansion of $(x+y+z)^{10}$ is

A. 11

B. 33

C. 66

D. 132

Answer: C

Watch Video Solution

148. The number of terms in the expansion of $(x+y+z)^n$ is

A. n

B. $n+1$

C. $\sum n$

D. $\sum (n+1)$

Answer: D

View Text Solution

149. The number of terms in the expansion of $(a+b+c+d)^5$ is

A. 20

B. 120

C. 336

D. 56

Answer: D

Watch Video Solution

EXERCISE 1B (BINOMIAL COEFFICIENTS)

1. ${}^{n}C_0 + {}^{n}C_1 + {}^{n}C_2 + \ldots + {}^{n}C_n =$

A. n^n

B. $n!$

C. 2^n

D. $2n!$

Answer: C

Watch Video Solution

2. $1.^{n}C_0 + 4^1.^{n}C_1 + 4^2.^{n}C_2 + 4^3.^{n}C_3 + \ldots. + 4^n.^{n}C_n =$

A. 2^n

B. 3^n

C. 4^n

D. 5^n

Answer: D

Watch Video Solution

3. $C_0 + 3.\,C_1 + 5.\,C_2 + \ldots..(2n+1).\,C_n =$

A. $(n+1)2^n$

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

C. $(n+3)2^n$

D. $(n+4)2^n$

Answer: A

Watch Video Solution

4. $3.C_0 + 7.C_1 + 11.C_2 + \ldots\ldots + (4n+3).C_n =$

A. $(3n+2)2^n$

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

C. $(2n+3)2^n$

D. $(3n+2)3^n$

Answer: C

Watch Video Solution

5. If $(1+x)^n = C_0 + C_1 x + C_2 x^2 + \ldots\ldots + C_n x^n$, then $C_0 + 2.\, C_1 + 3.\, C_2 + \ldots. + (n+1).\, C_n =$

A. $2^n + n2^{n-1}$

B. $2^{n-1} + n2^n$

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

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

Answer: A

Watch Video Solution

6. $C_0 + 4.\, C_1 + 7.\, C_2 + \ldots\ldots (n+1)$ terms =

A. $(3n+2)2^n$

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

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

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

Answer: A

Watch Video Solution

7. If C_k is the coefficient of x^k in the expansion of $(1+x)^{2005}$ and if a,d are real numbers then $\sum_{k=0}^{2005}(a+kd).C_k$ =

A. $(2a+2005d)2^{2004}$

B. $(2a+2005d)2^{2005}$

C. $(2a+2004d)2^{2005}$

D. $(2a+2004)2^{2005}$

Answer: A

Watch Video Solution

8. If n is a positive integer, then value of $(3n+2)^nC_0+(3n-1)^nC_1+(3n-4)^nC_2+\ldots.+2(^nC_n)$ is

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

B. $(3n)2^n$

C. $(3n-1)2^n$

D. $(3n-3)2^n$

Answer: A

View Text Solution

9. $\sum_{k=1}^{\infty}\sum_{r=0}^{k}\frac{1}{3^k}({}^kC_r) =$

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

B. $\frac{2}{3}$

C. 1

D. 2

Answer: D

View Text Solution

View Text Solution

10. $C_2 + C_4 + C_6 + \ldots\ldots = $

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

B. 2^{n+1}

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

D. $\frac{2^{n-1}}{5}$

Answer: A

Watch Video Solution

11. If $C_0, C_2, C_4, \ldots\ldots$ are the binomial coefficient in the expansion of $(1+x)^9$ then $C_0 + C_2 + C_4 + C_6 + C_8 = $ `

A. 2^7

B. 256

C. 2^9

D. 258

Answer: B

Watch Video Solution

12. ${}^nC_0 - {}^nC_1 + {}^nC_2 \ldots . (- 1)^n {}^nC_n =$

A. -1

B. 1

C. 0

D. 2

Answer: C

Watch Video Solution

13. $C_0 - 2.\ C_1 + 3.\ C_2 \ldots . + (-1)^n (n+1).\ C_n =$

A. -1

B. 1

C. 0

D. none

Answer: C

View Text Solution

14. $3.\ C_0 - 5.\ C_1 + 7.\ C_2 - 9.\ C_3 + \ldots . (n+1)$ terms =

A. 0

B. 1

C. 2

D. 3

Answer: A

View Text Solution

15. $3.^{n}C_0 - 8.^{n}C_1 + 13.^{n}C_1 - 18,^{n}C_3 + \ldots..(n+1)$ terms =

A. 0

B. -1

C. 1

D. 2

Answer: A

View Text Solution

16. $C_0 + \frac{C_1}{2} + \frac{C_2}{2^2} + \frac{C_3}{2^3} + \ldots.. + \frac{C_n}{2^n} =$

A. $(3/2)^n$

B. $(2/3)^n$

C. $(5/3)^n$

D. $(3/5)^n$

Answer: A

Watch Video Solution

17. $C_1 + 4.\ C_2 + 7.\ C_3 + \ldots\ldots + (3n-2).\ C_n =$

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

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

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

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

Answer: B

Watch Video Solution

18. $C_0 + 3.\ C_1 + 5.\ C_2 + \ldots\ldots (2n+1).\ C_n =$

A. $(4n-10)2^n + n + 6$

B. $(2n-5)2^n + n + 6$

C. $(2n-5)2^{n-1} + n + 6$

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

Answer: B

Watch Video Solution

19. $C_1 + 2.\ C_2 + 3.\ C_3 + \ldots\ldots + n.\ C_n =$

A. $n.\ 2^n$

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

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

D. $(n-1).2^n$

Answer: B

Watch Video Solution

20. $2.\ C_2 + 6.\ C_3 + 12.\ C_4 + \ldots\ldots + n(n-1).\ C_n =$

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

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

C. $n.\ (n+1).\ 2^{n-5}$

D. $n.\ (n+1).2^{n+5}$

Answer: A

Watch Video Solution

21. $C_2 + 2.\ C_3 + 3.\ C_4 + \ldots. + 14.\ C_{15} =$

A. $2^{14}.\ 13 + 1$

B. $2^{13}.12+1$

C. $2^{11}.13+2$

D. none

Answer: A

View Text Solution

22. $k-{}^{n}C_{1}(k-1)+{}^{n}C_{2}(k-2)-\ldots..+(-1)^{n}{}^{n}C_{n}(k-n)=$

A. 0

B. 1

C. -1

D. none

Answer: A

View Text Solution

23. $\frac{C_1}{C_0} + 2.\frac{C_2}{C_1} + 3.\frac{C_3}{C_2} + \ldots. + n.\frac{C_n}{C_{n-1}} =$

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

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

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

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

Answer: A

Watch Video Solution

24. $2.\frac{C_2}{C_1} + 3.\frac{C_3}{C_2} + \ldots.... + n.\frac{C_n}{C_{n-1}} =$

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

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

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

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

Answer: B

Watch Video Solution

25. $(1+x)^{15} = a_0 + a_1 x + \ldots . + a_{15} x^{15} \Rightarrow \sum_{r=1}^{15} r \frac{a_r}{a_{r-1}} =$

A. 110

B. 115

C. 120

D. 135

Answer: C

Watch Video Solution

26. Prove that : If n is a positive integer, then prove that

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

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

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

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

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

Answer: A

Watch Video Solution

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

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

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

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

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

Answer: D

Watch Video Solution

28. $\frac{C_0}{1} + \frac{C_2}{3} + \frac{C_4}{5} + \ldots\ldots + \frac{C_{16}}{17} =$

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

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

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

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

Answer: C

Watch Video Solution

29. $C_0 + \frac{C_1}{2} + \frac{C_2}{2^2} + \frac{C_3}{2^3} + \ldots\ldots + \frac{C_n}{2^n} =$

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

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

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

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

Answer: B

Watch Video Solution

30. $C_3/4 + C_5/6 + C_7/8 + \ldots. =$

A. $\frac{\left(2^{n+1} - n^2 - n - 2\right)}{2(n+1)}$

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

C. $\frac{\left(3^{n+2} - n^2 - n - 2\right)}{n+1}$

D. none

Answer: A

View Text Solution

31. $C_0 + \frac{C_1 x}{2} + \frac{C_2 x^2}{3} + \ldots.. + \frac{C_n x^n}{n+1} =$

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

B. $\frac{(1+x)^n}{(n+1)x}$

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

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

Answer: D

View Text Solution

32. 2. $C_0 + \frac{2^2}{2}.C_1 + \frac{2^3}{3}.C_2 + \ldots\ldots + \frac{2^{11}}{11}.C_{10} =$

A. $\frac{(3^{11}+1)}{11}$

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

C. $\frac{3^7+1}{7}$

D. $\frac{4^7-1}{7}$

Answer: B

Watch Video Solution

33. $k.\ C_0 + k^2.\ \frac{C_1}{2} + k^3.\ \frac{C_2}{3} + \ldots\ldots + k^{n+1}.\ \frac{C_n}{n+1} =$

A. $\frac{(k+1)^{n+1} - 1}{n+1}$

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

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

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

Answer: A

Watch Video Solution

34. $2.\ C_0 + 2^2\frac{C_1}{2} + 2^3.\ \frac{C_2}{3} + \ldots\ldots + 2^{n+1}.\ \frac{C_n}{n+1} =$

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

B. $\frac{4^n}{n+1}$

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

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

Answer: C

View Text Solution

35. $\frac{C_0}{2}+\frac{C_1}{3}+\frac{C_2}{4}+\ldots\ldots+\frac{C_n}{n+2}=$

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

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

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

D. none

Answer: C

View Text Solution

36. The sum of $(n+1)$ 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

View Text Solution

37. $\frac{C_0}{2} + \frac{C_1}{6} + \frac{C_2}{12} + \ldots. + \frac{C_n}{(n+1)(n+2)} =$

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

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

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

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

Answer: C

View Text Solution

38. Show that $\frac{2^2 \cdot C_0}{1 \cdot 2} + \frac{2^3 \cdot C_1}{2 \cdot 3} + \frac{2^4 \cdot C_2}{3 \cdot 4} + \ldots + \frac{2^{n+2} \cdot C_n}{(n+1)(n+2)} = \frac{3^{n+2} - 2n - 5}{(n+1)(n+2)}$

Hence deduce that $\frac{C_0}{1.2} - \frac{C_1}{2.3} + \frac{C_2}{3.4} - \ldots = \frac{1}{n+2}$

A. $\frac{3^{n+2} - 2n - 5}{(n+1)(n+2)}$

B. $\frac{3^{n+2} + 2n + 5}{(n+1)(n+2)}$

C. $\frac{3^{n+5} - 5n + 3}{(n+1)^2}$

D. none

Answer: A

Watch Video Solution

39. $C_0C_1 + C_1C_2 + C_2C_3 + \ldots + C_{n-1}C_n =$

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

B. $\frac{(2n)!}{(n-3)!(n+1)!}$

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

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

Answer: A

Watch Video Solution

40. If $(C_0 + C_1)(C_1 + C_2)\ldots(C_{n-1} + C_n) = kC_0C_1C_2\ldots C_n$ then $k =$

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

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

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

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

Answer: A

Watch Video Solution

41. If $\frac{1}{1!(n-1)!}+\frac{1}{3!(n-3)!}+\frac{1}{5!(n-5)!}+\ldots.=$

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

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

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

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

Answer: B

Watch Video Solution

42. $\sum_{r=0}^{n}\left({}^nC_r\right)^2=$

A. 0

B. $n!$

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

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

Answer: D

View Text Solution

43. $C_0^2 + 3.\, C_1^2 + 5.\, C_2^2 + \ldots. + (2n+1).\, C_n^2 =$

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

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

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

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

Answer: D

View Text Solution

44. If C_r denotes the binomial coefficient ${}^nC_r$ then $(-1)C_0^2 + 2C_1^2 + 5C_2^2 + \ldots\ldots + (3n-1)C_n^2 =$

A. $(3n-2)^{2n}C_n$

B. $\left(\frac{3n-2}{2}\right)^{2n} C_n$

C. $(5+3n)^{2n}C_n$

D. $\left(\frac{3n-5}{2}\right)2^2 nC_{n+1}$

Answer: B

View Text Solution

45. If n is odd then $C_0^2 - C_1^2 + C_2^2 - \ldots\ldots + (-1)^n C_n^2 =$

A. 0

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

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

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

Answer: A

View Text Solution

46. If n is even then $C_0^2 - C_1^2 + C_2^2 - \ldots\ldots + (-1)^n C_n^2 =$

A. 0

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

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

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

Answer: B

View Text Solution

47. ${}^{(2n+1)}C_0 - {}^{(2n+1)}C_1 + {}^{(2n+1)}C_2 - \ldots\ldots + {}^{(2n+1)}C_{2n} =$

A. -1

B. 1

C. 3

D. -2

Answer: B

Watch Video Solution

48. Prove that

$$\left({}^{2n}C_0\right)^2 - \left({}^{2n}C_1\right)^2 + \left({}^{2n}C_2\right) - \left({}^{2n}C_3\right)^2 + \ldots\ldots + \left({}^{2n}C_{2n}\right)^2 = (-1)^{n\,2n}C_n.$$

A. $(-1)^{n\,2n}C_n$

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

C. $(-1)^{n-1\,2n}C_n$

D. $(-1)^{n-1\,2n}C_{n+1}$

Answer: A

Watch Video Solution

49. $C_1/1 - C_2/2 + C_3/3 - C_4/4 + \ldots + (-1)^{n-1} C_n/n =$

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

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

C. $1 + \frac{2}{3} + \frac{3}{4} + \ldots . . + \frac{n}{n+1}$

D. none

Answer: A

View Text Solution

50. $C_0 - 2^3 . C_1 + 3^2 . C_2 - \ldots . + (-1)^n (n+1)^2 . (C_n) =$

A. 0

B. 2^n

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

D. none

Answer: A

View Text Solution

51. Use the identity $(1+x)^m(1+x)^n = (1+x)^{m+n}$ to prove Vandermonde's theorem,

$${}^mC_r + {}^mC_{r-1}.{}^nC_1 + {}^mC_{r-2}\cdot{}^nC_2 + \ldots. + {}^nC_r = {}^{(m+n)}C_r$$

A. ${}^{(m+n)}C_r$

B. ${}^{mn}C_r$

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

D. $((m+n))C_{r-1}$

Answer: A

Watch Video Solution

52. $C_0 - C_2 + C_4 - C_6 + \ldots\ldots.$

A. 2^{n-1}

B. $2^{n/2}\sin\left(\frac{n\pi}{4}\right)$

C. $2^{n/2}\cos\left(\frac{n\pi}{4}\right)$

D. 0

Answer: C

View Text Solution

53. $C_1 - C_3 + C_5 - C_7 + \ldots\ldots$

A. 2^{n-1}

B. $2^{n/2}\sin\left(\frac{n\pi}{4}\right)$

C. $2^{n/2}\cos\left(\frac{n\pi}{4}\right)$

D. 0

Answer: B

View Text Solution

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

A. $C_0^2+2.C_1^2+3.C_2^2+\ldots\ldots+(n+1).C_n^2$

B. $(C_0+C_1+C_2+\ldots..+C_n)^2$

C. $C_0^2+C_1^2+C_2^2+\ldots..+C_n^2$

D. none

Answer: C

Watch Video Solution

55. If $a_n=\sum_{r=0}^{n}\frac{1}{{}^nC_r}$ then $\sum_{r=0}^{n}\frac{r}{{}^nC_r}$ equal to

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

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

C. $n-1$

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

Answer: A

Watch Video Solution

56. If $x + y = 1$, then $\sum_{r=6}^{n} r^n C_r x^r . Y^{n-r} =$

A. 1

B. n

C. nx

D. ny

Answer: C

View Text Solution

57. If $x + y = 1$ then $\sum_{r=0}^{n} r^2 .^n C_r x^r . y^{n-r} =$

A. nxy

B. $nx(x+yn)$

C. $nx(nx+y)$

D. none

Answer: C

View Text Solution

58. the value of $\frac{1}{(81)^n} - {}^{2n}C_1 . \frac{(10)^2}{(81)^n} + {}^{2n}C_1 \frac{(10)^2}{(81)^n} \ldots\ldots + \frac{(10)^2 n}{(81)^n}$ is

A. 0

B. 1

C. $(-1)^n$

D. none

Answer: B

Watch Video Solution

59. There are two bags each of which contains n balls. A main has to select and equal number of balls from both the bags. The number of ways in which the man can choose at least one ball from each bas is

A. ${}^{2n}C_n$

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

C. ${}^{2n}C_{n-1}$

D. ${}^{n}C_{n-1}$

Answer: C

View Text Solution

60. The sum of the coefficient of $\left(1+2x-4x^2\right)^{35}$ is

A. 0

B. 1

C. -1

D. 2

Answer: C

Watch Video Solution

61. The sum of the coefficients of $(5x-4y)^n$ where n is positive integer, is

A. 0

B. 1

C. -1

D. none

Answer: B

Watch Video Solution

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

A. 0

B. 1

C. -1

D. 2

Answer: C

Watch Video Solution

63. The sum of the coefficients of even powers of x in the expansion of $\left(1+x+x^2\right)^{15}$ is

A. $\frac{3^{15}+1}{2}$

B. $\frac{2^{15}+2}{2}$

C. $\frac{3^{15}-1}{2}$

D. none

Answer: A

Watch Video Solution

64. The sum of the coefficients of even powers of x in the expansion of $\left(1+x+x^2+x^3\right)^5$ is

A. 510

B. 512

C. 521

D. 522

Answer: B

View Text Solution

65. The sum of the coefficients of odd powers of x in the expansion of $\left(1+x-x^2+x^3\right)^5$ is

A. 510

B. 512

C. 521

D. 522

Answer: B

View Text Solution

66. The sum of coefficients of odd powers of x in the expansion of $\left(1+x-x^2-x^3\right)^6$ is

A. 0

B. 32

C. 64

D. -1

Answer: A

Watch Video Solution

67. The sum of coefficients of integral powers of x in the binomial expansion of $\left(1-2\sqrt{x}\right)^{50}$ is

A. $\frac{1}{2}\left(3^{50}+1\right)$

B. $\frac{1}{2}\left(33^{50}\right)$

C. $\frac{1}{2}\left(3^{50}-1\right)$

D. $\frac{1}{2}\left(2^{50}+1\right)$

Answer: A

View Text Solution

68. Sum of the last 30 coefficients in the expansion of $(1+x)^{59}$, when expanded in ascending powers of x, is

A. 2^{59}

B. 2^{18}

C. ${}^{40}C_{20} - 2^{19}$

D. 2^{58}

Answer: D

Watch Video Solution

69. If the sum of the coefficients of $(x+y)^n$ is 4096 , then the greatest coefficients is

A. 924

B. 726

C. 845

D. 694

Answer: A

Watch Video Solution

70. If the sum of the coefficients of $(1+2x)^n$ is 6561 then the value of n

A. 8

B. 16

C. 3

D. 18

Answer: A

Watch Video Solution

71. If the sum of the coefficients in the expansion of $\left(1-3x+10x^2\right)^n$ is a and if the sum of the coefficients in the expansion of $\left(1+x^2\right)^n$ is b, then

A. $a=3b$

B. $a=b^3$

C. $b = a^2$

D. none of these

Answer: B

Watch Video Solution

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

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

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

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

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

Answer: A

Watch Video Solution

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

$$a_1 + a_3 + a_5 + \ldots. + a_{2n-1} = \frac{3^n - 1}{2}$$

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

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

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

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

Answer: B

Watch Video Solution

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

A. $\left({}^nC_r\right)^2$

B. ${}^nC_r . {}^nC_{r-1}$

C. ${}^{2n}C_r$

D. ${}^{2n}C_{r+1}$

Answer: C

View Text Solution

75. If $\left(1+2x+3x^2\right)^{10}=a_0+a_1x+a_2x^2+\ldots\ldots+a_{20}x^{20}$ then $\frac{a_2}{a_1}$ =

A. 10.5

B. 21

C. 10

D. 5.5

Answer: A

Watch Video Solution

76. If $\left(1+x-2x^2\right)^8 = 1 - a_1x + a_2x^2 + \ldots\ldots + a_{16}x^{16}$, then $a_2 + a_4 + a_6 + \ldots\ldots + a_{16}$ =

A. 30

B. 31

C. 33

D. 35

Answer: B

Watch Video Solution

77. If $\left(1+x+x^2+x^3\right)^5 = \sum_{k=0}^{15} a_k x^k$ then $\sum_{k=0}^{7} a_{24} =$

A. 128

B. 256

C. 512

D. 1024

Answer: C

View Text Solution

78. If a_k is the coefficient of x^k in the expansion of $\left(1+x+x^2\right)^n$ for k = 0,1,2,.....,2n then $a_1 + 2a_2 + 3a_3 + \ldots\ldots\ldots + 2n.\ a_{2n} =$

A. $-a_0$

B. 3^n

C. $n.3^n$

D. $-n.3^n$

Answer: C

Watch Video Solution

79. If $\left(3+7x-9x^2\right)^n = a_0 + a_1x + a_2x^2 + \ldots\ldots + a_{2n}x^{2n}$ prove the $a_0 + a_1 + a_2 + \ldots\ldots + a_{2n} = 1$

A. 0

B. a_n

C. $-a_n$

D. a_{n-1}

Answer: B

Watch Video Solution

80. If $\left(1+x+x^2\right)^n = \sum_{r=0}^{2n} a_r x^{'}$ then $a_1 - 2a_2 + 3a_3 - \ldots\ldots - 2na_{2n} = \ldots\ldots$

A. 0

B. 1

C. n

D. $-n$

Answer: D

View Text Solution

81. If a_r is the coefficient of x^r in the expansion of $\left(1-2x+3x^2\right)^n$ then $\sum_{r=0}^{2n} ra_r =$

A. $n.2^n$

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

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

D. $(n+1).2(n+1)$

Answer: B

Watch Video Solution

82. If the sum of the coefficient in the expansion of $\left(p^2x^2 - 2px + 1\right)^{51}$ vanishes then $p =$

A. 2

B. -1

C. 1

D. -2

Answer: C

Watch Video Solution

83. If the number of terms in the expansion of $\left(1 - \frac{2}{x} + \frac{4}{x^2}\right)^n, x \neq 0$ is 28, then the sum of the coefficients of all the terms in this expansion, is

A. 64

B. 2187

C. 243

D. 729

Answer: D

Watch Video Solution

EXERCISE 1C (BINOMIAL THEOREM WITH RATIONAL INDEX)

1. The range of x for which the expansion of $(4+5x)^{-7/2}$ is valid

A. $(3/5, 4/5)$

B. $(-4/5, 4/5)$

C. $(-4/5, -2/5)$

D. none

Answer: B

Watch Video Solution

2. The range of x for which the expansion of $\left(1-4x^2\right)^{-9/4}$ is valid

A. $\left(-\frac{1}{2}, \frac{1}{2}\right)$

B. $\left(0, \frac{1}{2}\right)$

C. $\left(\frac{1}{2}, \frac{3}{2}\right)$

D. $\left(-\frac{3}{2}, -\frac{1}{2}\right)$

Answer: A

View Text Solution

3. The 4th term of $(1-2x)^{12}$ when $x = 1/3$ is

Watch Video Solution

4. The fifth term of $(1-2x/3)^{3/4}$ is

A. $-\frac{5x^4}{1152}$

B. $\frac{5x^4}{1152}$

C. $\frac{5x^4}{1052}$

D. $\frac{5x^4}{1052}$

Answer: A

View Text Solution

5. The general term of $(1+2x)^{1/2}$ is

A. $\frac{1.3.5.\ldots.(2r-3)(-1)^{r-1}x^r}{r!}$

B. $\frac{1.3.5.\ldots(2r-1)(-1)^{r-1}x^r}{r!}$

C. $\frac{1.3.5.\ldots(2r-5)(-1)^{r-1}x^r}{r!}$

D. none

Answer: A

View Text Solution

6. The general term of $(4-3x)^{3/2}$ is

A. $\frac{1.3.5...(2r-5)}{r!}24\left(\frac{3x}{8}\right)^r$

B. $\frac{1.3.5...(2r-5)}{r!}26\left(\frac{-3x}{8}\right)^r$

C. $\frac{1.3.5...(2r-5)}{r!}28\left(\frac{-3x}{8}\right)^r$

D. none

Answer: A

Watch Video Solution

7. The general term of $(2a-3b)^{1/2}$ is

A. $\frac{1.3.5.....(2r-5)}{r!}\frac{1}{\sqrt{2a}}\left(\frac{3b}{4a}\right),$

B. $\frac{1.3.5...(2r-3)}{r!}\frac{1}{\sqrt{2a}}\left(\frac{3b}{4a}\right),$

C. $\frac{1.3.5...(2r-1)}{r!}\frac{1}{\sqrt{2a}}\left(\frac{3b}{4a}\right),$

D. none

Answer: C

View Text Solution

8. The coefficient of x^7 in $\left(1-2x+3x^2-4x^2+\ldots.\infty\right)^{-4}$ is

A. 2

B. 4

C. 6

D. 8

Answer: D

View Text Solution

9. The coefficient of x^{24} in $\left(1+3x+6x^2+10x^3+\ldots\ldots\infty\right)^{2/3}$ is

A. 25

B. 125

C. 50

D. 300

Answer: A

Watch Video Solution

10. The coefficient of x^7 in $\left(1+2x+3x^2+4x^4+\ldots\ldots\infty\right)^{-3}$ is

A. 0

B. 1

C. 3

D. 3

Answer: A

View Text Solution

11. The coefficient of x^6 in $\left(1+x+x^2+x^3+x^4+x^5\right)^6$ is

A. 456

B. 365

C. 256

D. 425

Answer: A

View Text Solution

12. The coefficient of x^4 in the expression $\left(1+2x+3x^2+4x^3+\ldots.\right)^{1/2}$ is

A. 0

B. 1

C. -1

D. 2

Answer: B

View Text Solution

13. The coefficient of x^5 in the expansion of $(1+x)^{21}+(1+x)^{22}+\ldots.+(1+x)^{30}$ is

A. ${}^{51}C_5$

B. ${}^{9}C_5$

C. ${}^{31}C_6-{}^{21}C_6$

D. ${}^{30}C_5+{}^{20}C_5$

Answer: C

View Text Solution

14. The coefficient of $x^r(0\leq r\leq n-1)$ in the expansion of $(x+3)^{n-1}+(x+3)^{n-2}(x+2)+(x+3)^{n-2}(x+2)^2+\ldots.+(x+2)^n$

is

A. ${}^{n}C_{r}(3^{r}-2^{n})$

B. ${}^{n}C_{r}\left(3^{n-r}-2^{n-r}\right)$

C. ${}^{n}C_{r}\left(3^{r}+2^{n-r}\right)$

D. none

Answer: B

View Text Solution

15. Coefficient of x^{50} in $(1+x)^{1000}+2x(1+x)^{999}+3x^{2}(1+x)^{999}+\ldots\ldots+1001x^{1000}$ is

A. ${}^{1001}C_{50}$

B. ${}^{1000}C_{50}$

C. ${}^{1002}C_{50}$

D. ${}^{1002}C_{51}$

Answer: C

View Text Solution

16. The coefficient of x^k in the expansion of $E = 1 + (1+x) + (1+x)^2 + \ldots. + (1+x)^n$ is

A. ${}^nC_k$

B. ${}^{n+1}C_k$

C. ${}^{n+1}C_{k+1}$

D. none of these

Answer: C

View Text Solution

17. The coefficient of x^2 in $(1+x)^2(8-x)^{-1/3}$ is

A. $\frac{2167}{4032}$

B. $\frac{2265}{4132}$

C. $\frac{313}{576}$

D. $\frac{2617}{4302}$

Answer: C

View Text Solution

18. The coefficient of x^4 in the expansion of $\frac{(1-3x)^2}{(1-2x)}$ is

A. 1

B. 2

C. 3

D. 4

Answer: D

View Text Solution

19. The coeff. Of x^2 in $\frac{1+x^2}{(1-x)^3}$ is

A. $2^r\left(9r^2+15r+8\right)$

B. $2^{r-2}\left(r^2+9r+15\right)$

C. $2^{r-3}\left(9r^2+15r+8\right)$

D. none of these

Answer: C

Watch Video Solution

20. The coefficient of x^{10} in $\frac{1-2x+3x^2}{1-x}$ is

A. 1

B. 2

C. 4

D. -2

Answer: B

Watch Video Solution

21. The coeff. Of x^2 in $\frac{1+x^2}{(1-x)^3}$ is

A. 3

B. 4

C. 7

D. 12

Answer: C

Watch Video Solution

22. The coefficient of x^n in $\frac{(1+x)^2}{(1-x)^2}$ is

A. $3n^2$

B. $2n + 1$

C. $3n - 1$

D. $4n$

Answer: D

View Text Solution

23. Find the coefficient of x^{10} in the expansion of $\frac{1 + 2x}{(1 - 2x)^2}$.

A. $r.\ 2^r$

B. $(2r - 1)2^r$

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

D. $(2r + 1)2^r$

Answer: D

Watch Video Solution

24. The coefficient of x^n in $\frac{(1+x)^n}{1-x}$ where $n \in N$ is

A. n

B. 2^n

C. 3^n

D. 4^n

Answer: B

View Text Solution

25. If $0 < x < 1$, the first negative term in the expansion of $(1+x)^{27/5}$ is

A. 5th term

B. 8th term

C. 6th term

D. 7th term

Answer: B

Watch Video Solution

26. If x is so small that x^2 and higher powers of x may be neglected then

$$\frac{(1-3x)^{1/2}(1+x)^{2/3}}{(1-x)^{1/2}}$$

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

B. $1-\frac{x}{5}$

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

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

Answer: A

Watch Video Solution

27. If x is numerically so small so that x^2 and higher powers of x can be neglected , then $\left(1+\frac{2x}{3}\right)^{\frac{3}{2}}, (32+5x)^{-\frac{1}{5}}$ is approximately equal to :

A. $\frac{32+31x}{64}$

B. $\frac{31+32x}{64}$

C. $\frac{31+32x}{64}$

D. $\frac{1-2x}{64}$

Answer: A

Watch Video Solution

28. If x is so small that x^2 and higher powers of x may be neglected then $\frac{(1+2x/3)^{-4}(4+5x)^{1/2}}{(9+x)^{3/2}} =$

A. $\frac{2}{27}\left(1-\frac{55x}{12}\right)$

B. $\frac{2}{27}\left(1-\frac{55x}{24}\right)$

C. $\frac{2}{27}\left(1-\frac{53x}{12}\right)$

D. $\frac{2}{27}\left(1-\frac{53x}{24}\right)$

Answer: D

View Text Solution

29. If |x| is so small that x^2 and higher powers of x may be neglected, then an approximately value of $\frac{\left(1+\frac{2}{3}x\right)^{-3}(1-15x)^{-1/5}}{(2-3x)^4}$ is

A. $\frac{1}{8}(1+7x)$

B. $\frac{1}{16}(1-7x)$

C. $(1-7x)$

D. $\frac{1}{16}(1+7x)$

Answer: D

Watch Video Solution

30. If x is small so that x^2 and higher powers can be neglected, then the approximately value for $\frac{(1-2x)^{-1}(1-3x)^{-2}}{(1-4x)^{-3}}$ is

A. $1-2x$

B. $1-3x$

C. $1-4x$

D. $1-5x$

Answer: C

Watch Video Solution

31. The coefficients of x^3 in $\frac{(1-4x)^2(1-2x^2)^{1/2}}{(4-x)^{3/2}}$ is

A. $\frac{13027}{8192}$

B. $\frac{13207}{8291}$

C. $\frac{13720}{8921}$

D. none

Answer: A

Watch Video Solution

32. If x is so small, higher powers of x may be neglected then $\sqrt{x^2+25}-\sqrt{x^2+9}=$

A. $2-\frac{x^2}{15}$

B. $3+\frac{x^2}{15}$

C. $3-\frac{x^2}{15}$

D. $2+\frac{x^2}{15}$

Answer: A

View Text Solution

33. If x is so small, higher powers of x may be neglected then $\sqrt[3]{x^2+27}-\sqrt[3]{x^2+8}=$

A. $2-\frac{5x^2}{24}$

B. $1+\frac{5x^2}{108}$

C. $1-\frac{5x^2}{108}$

D. $2+\frac{5x^2}{24}$

Answer: C

Watch Video Solution

34. If a is small in comparison with x, then $\left(\frac{x}{x+a}\right)^{1/2}+\left(\frac{x}{x-a}\right)^{1/2}=$

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

B. $2+\frac{3a^2}{4x^2}$

C. $3+\frac{4a^2}{5x^2}$

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

Answer: B

Watch Video Solution

35. If a is small in comparison with x, then $\left(\frac{x}{x+a}\right)^{1/3}-\left(\frac{x}{x-a}\right)^{1/3}=$

A. $\frac{-2a}{3x}-\frac{28a^3}{81x^3}$

B. $\frac{2a}{3x}-\frac{28a^3}{81x^3}$

C. $\frac{-2a}{3x}+\frac{28a^3}{81x^3}$

D. $\frac{2a}{3x}+\frac{28a^3}{81x^3}$

Answer: A

Watch Video Solution

36. If $\sqrt{\left[\frac{x}{x-1}\right]} = a_0 + \frac{a_1}{x-1} + \frac{a_2}{(x-1)^2} + \ldots\ldots$ where $x > 2$ then $16a^3 =$

A. 2

B. 4

C. 1

D. 3

Answer: C

Watch Video Solution

37. If $(a+bx)^{-3} = \frac{1}{27} + \frac{1}{3}x + \ldots.$ then the ordered pair $(a, b) =$

A. $\left(1, \frac{1}{3}\right)$

B. $(3, 9)$

C. $(3, -9)$

D. $(3, -27)$

Answer: C

Watch Video Solution

38. If p and q are the coefficients of x^n in $(1+x)^{2n}$ and $(1-4x)^{-1/2}, |x| < \frac{1}{4}$, then

A. $p = q$

B. $p = 2q$

C. $q = 2p$

D. $p + q = {}^{2n}C_n$

Answer: A

View Text Solution

39. $(8.8)^{1/3} =$

A. $2 + \frac{29}{900}$

B. $2 - \frac{29}{900}$

C. $2 + \frac{58}{900}$

D. $2 - \frac{58}{900}$

Answer: C

Watch Video Solution

40. $\sqrt[3]{1003} - \sqrt[3]{997} =$

A. 0.01

B. 0.02

C. 0.03

D. 0.04

Answer: B

View Text Solution

41. $1+\frac{1}{4}+\frac{1.3}{4.8}+\frac{1.3.5}{4.8.12}+\ldots\ldots=$

A. $\sqrt{2}$

B. $1/\sqrt{2}$

C. $\sqrt{3}$

D. $1/\sqrt{3}$

Answer: A

Watch Video Solution

42. $1+\frac{2}{4}+\frac{2.5}{4.8}+\frac{2.5.8}{4.8.12}+\frac{2.5.8.11}{4.8.12.16}+\ldots\ldots=$

A. $4^{-2/3}$

B. $\sqrt{16}$

C. $\sqrt{4}$

D. $4^{3/2}$

Answer: B

Watch Video Solution

43. $1+\frac{2}{6}+\frac{2.5}{6.12}+\frac{2.5.8}{6.12.18}+\ldots\ldots\ldots=$

A. $\sqrt[3]{3}$

B. $\sqrt[3]{4}$

C. $\sqrt[3]{5}$

D. $\sqrt[3]{6}$

Answer: B

View Text Solution

44. Find the sum of the infinite series

$$\frac{3}{4}+\frac{3.5}{4.8}+\frac{3.5.7}{4.8.12}+....$$

A. $\sqrt{2}$

B. $2\sqrt{2}$

C. 2

D. none

Answer: B

Watch Video Solution

45. $1+\frac{1}{2}.\frac{3}{5}+\frac{1.3}{2.4}.\frac{9}{25}+\frac{1.3.5}{2.4.6}.\frac{27}{125}+.....\infty=$

A. $\sqrt{5/2}$

B. $\sqrt{2/5}$

C. $\sqrt{3/5}$

D. $\sqrt{5/3}$

Answer: A

Watch Video Solution

46. The sum of the series $1+\frac{2}{3}\left(\frac{1}{8}\right)+\frac{2\times5\times8}{3\times6\times9}\left(\frac{1}{8}\right)^3+\ldots$ is

A. $\frac{4}{\sqrt{49}}$

B. $\frac{\sqrt{49}}{4}$

C. $\frac{4}{\sqrt{81}}$

D. $\frac{\sqrt[3]{81}}{4}$

Answer: A

Watch Video Solution

47. $1+\frac{k}{3}+\frac{k(k+1)}{3.6}+\frac{k(k+1)(k+2)}{3.6.9}+\ldots=$

A. $(2/3)^k$

B. $(3/2)^k$

C. $2/3$

D. $3/2$

Answer: B

Watch Video Solution

48. Find the sum of the infinite series

$$\frac{7}{5}\left(1+\frac{1}{10^2}+\frac{1.3}{1.2}\cdot\frac{1}{10^4}+\frac{1.3.5}{1.2.3}\cdot\frac{1}{10^6}+\ldots.\right)$$

A. $\sqrt[3]{2}$

B. $\sqrt{2}$

C. $\sqrt[3]{3}$

D. $\sqrt[3]{4}$

Answer: B

Watch Video Solution

49. $1-\frac{1}{4}+\frac{1.3}{4.8}-\frac{1.3.5}{4.8.12}+\ldots\ldots=$

A. $\sqrt{2/3}$

B. $\sqrt{2}/3$

C. $2/3$

D. $\sqrt{3}/2$

Answer: A

Watch Video Solution

50. $1-\frac{1}{5}+\frac{1.4}{5.10}-\frac{1.5.7}{5.10.15}+\ldots\ldots=$

A. $\sqrt{3/8}$

B. $\sqrt[3]{5/8}$

C. $\sqrt[3]{7/8}$

D. $\sqrt[3]{9/8}$

Answer: B

Watch Video Solution

51. $1-\frac{1}{8}+\frac{1.3}{8.16}-\frac{1.3.5}{8.16.24}+\ldots..=$

A. $\sqrt{5}$

B. $1/\sqrt{5}$

C. $2/\sqrt{5}$

D. $\sqrt{5}/2$

Answer: C

Watch Video Solution

52. $1-\frac{3}{4}+\frac{3.5}{4.8}-\frac{3.5.7}{4.8.12}+\ldots.=$

A. $\sqrt{8/27}$

B. $\sqrt{9/32}$

C. $\sqrt{7/31}$

D. none

Answer: A

Watch Video Solution

53. $1-\frac{3}{16}+\frac{1.4}{1.2}\left(\frac{3}{16}\right)^2-\frac{1.4.7}{1.2.3}\left(\frac{3}{16}\right)^3+\ldots..=$

A. $(4/5)^{2/3}$

B. $(5/3)^{3/2}$

C. $(7/2)^{1/2}$

D. $(7/2)^{2/3}$

Answer: A

Watch Video Solution

54. If $x = \frac{1}{3} + \frac{1.3}{3.6} + \frac{1.3.5}{3.6.9} + \ldots$, then $x^2 + 2x - 2 =$

A. 0

B. 1

C. 2

D. -1

Answer: A

Watch Video Solution

55. If $x = \frac{1}{5} + \frac{1.3}{5.10} + \frac{1.3.5}{5.10.15} + \ldots \infty$ then find $3x^2 + 6x$.

A. 1

B. 2

C. 3

D. 4

Answer: B

Watch Video Solution

56. $\frac{1.3}{3.6}+\frac{1.3.5}{3.6.9}+\frac{1.3.5.7}{3.6.9.12}+\ldots=$

A. 0.4 (nearly)

B. 0.3 (nearly)

C. $\sqrt{3}$

D. $\sqrt{3}-1$

Answer: A

Watch Video Solution

57. $\frac{1.4}{5.10}-\frac{1.4.7}{5.10.15}+\frac{1.4.7.10}{5.10.15.20}+\ldots.=$

A. $\frac{\sqrt{5}}{2}-\frac{4}{5}$

B. $\frac{\sqrt{5}}{2} - \frac{5}{4}$

C. $\frac{\sqrt{5}}{3} - \frac{5}{4}$

D. $\frac{\sqrt{5}}{3} - \frac{4}{5}$

Answer: A

Watch Video Solution

58. $\frac{3}{4.8} + \frac{3.5}{4.8.12} + \frac{3.5.7}{4.8.12.16} + \ldots. =$

A. $\frac{4\sqrt{2} - 5}{4}$

B. $\frac{6\sqrt{2} - 5}{4}$

C. $\frac{2\sqrt{2} - 5}{4}$

D. $\frac{3\sqrt{2} - 5}{4}$

Answer: A

Watch Video Solution

59. $\frac{5}{6.12}+\frac{5.8}{6.12.18}+\frac{5.8.11}{6.12.18.24}+\ldots\ldots=$

A. $\frac{3\sqrt{4}-4}{6}$

B. $\frac{3\sqrt[3]{5}-4}{6}$

C. $\frac{3\sqrt[3]{6}-4}{6}$

D. $\frac{3\sqrt[3]{7}-4}{6}$

Answer: A

Watch Video Solution

60. $\frac{5}{3.6}+\frac{5.7}{3.6.9}+\frac{5.7.9}{3.6.9.12}-\ldots\ldots=$

A. $\frac{3\sqrt{3}-2}{3}$

B. $\frac{3\sqrt{3}-5}{3}$

C. $\frac{3\sqrt{3}-5}{3}$

D. $\frac{3\sqrt{3}-1}{3}$

Answer: A

Watch Video Solution

61. $\frac{1}{4} - \frac{5}{4.8} + \frac{5.7}{4.8.12} - \ldots\ldots = $

A. $\frac{3\sqrt{3} - 2\sqrt{5}}{9\sqrt{3}}$

B. $\frac{3\sqrt{3} - 3\sqrt{2}}{9\sqrt{3}}$

C. $\frac{3\sqrt{3} - 2\sqrt{3}}{9\sqrt{3}}$

D. $\frac{3\sqrt{3} - 2\sqrt{2}}{3}$

Answer: D

Watch Video Solution

62. $\frac{3}{4.8} + \frac{3.5}{4.8.12} + \frac{3.5.7}{4.8.12.16} + \ldots. = $

A. $\frac{\sqrt{3}}{2} - \frac{3}{4}$

B. $\frac{\sqrt{2}}{3}-\frac{3}{4}$

C. $\frac{\sqrt{3}}{2}-\frac{1}{4}$

D. $\frac{\sqrt{2}}{3}-\frac{1}{4}$

Answer: B

Watch Video Solution

63. If $x=\frac{5}{(2!).3}+\frac{5.7}{(3!).3^2}+\frac{5.7.9}{(4!).3^3}+\ldots.$

then find the value of x^2+4x.

A. 21

B. 23

C. 25

D. 27

Answer: B

Watch Video Solution

64. If $x=1+\frac{3}{1!}\times\frac{1}{6}+\frac{3\times 7}{2!}\left(\frac{1}{6}\right)^2+\frac{3\times 7\times 11}{3!}\left(\frac{1}{6}\right)^3+\ldots.$ "then"x^(4)` equals

A. 81

B. 54

C. 27

D. 8

Answer: C

Watch Video Solution

65. $1+\frac{n}{2}+\frac{n(n-1)}{2.4}+\frac{n(n-1)(n-2)}{2.4.6}+\ldots\ldots=$

A. $1+\frac{n}{3}+\frac{n(n+1)}{3.6}+\frac{n(n+1)(n+2)}{3.6.9}+\ldots.$

B. $1+\frac{n}{3}+\frac{n(n+2)}{3.6}+\frac{n(n+1)(n+1)}{3.6.9}+\ldots..$

C. $1+\frac{n}{3}+\frac{n(n+1)}{3.6}+\frac{n(n+1)(n+2)}{3.6.9}+\ldots..$

D. $1+\frac{n}{3}+\frac{n(n+2)}{3.6}+\frac{n(n+1)(n+2)}{3.6.9}+\ldots\ldots$

Answer: C

Watch Video Solution

66. $1+n.\frac{2n}{1+n}+\frac{n(n+1)}{1.2}\left(\frac{2n}{1+n}\right)^2+\ldots\ldots$

A. $1+n\frac{2n}{1-n}+\frac{n(n-2)}{1.2}\left(\frac{2n}{1-n}\right)^2+\ldots\ldots$

B. $1+n.\frac{2n}{1-n}+\frac{n(n-1)}{1.2}\left(\frac{2n}{1-n}\right)^2+\ldots\ldots$

C. $1+n.\frac{2n}{1-n}+\frac{n(n-1)}{1.2}\left(\frac{2n}{1-n}\right)^3+\ldots\ldots$

D. $1+n.\frac{2n}{1-n}+\frac{n(n-2)}{1.2}\left(\frac{2n}{1-n}\right)^3+\ldots\ldots$

Answer: B

Watch Video Solution

67. If $|x| < 1$ then

$$1 + n\left(\frac{2x}{1+x}\right) + \frac{n(n+1)}{2!}\left(\frac{2x}{1=x}\right)^2 + \ldots\ldots\ldots\infty =$$

A. $\left(\frac{2x}{1+x}\right)^n$

B. $\frac{(1+x)^n}{2x}\Bigg)^n$

C. $\left(\frac{1-x}{1+x}\right)^n$

D. $\left(\frac{1-x}{1+x}\right)^n$

Answer: D

Watch Video Solution

68. If $y = 2x + 3x^2 + 4x^3 + \ldots,$ then x I terms of y is

A. $\frac{1}{2}y - \frac{1.3}{2.4}y^2 + \frac{1.3.5}{2.4.6}y^3\ldots\ldots$

B. $\frac{1}{2}y + \frac{1.3}{2.4}y^2 + \frac{1.3.5}{2.4.6}y^2\ldots\ldots$

C. $\frac{1}{2}y - \frac{1.3}{2.4}y^2 - \frac{1.3.5}{2.4.6}y^3\ldots\ldots$

D. $\frac{1}{2}y + \frac{1.3}{2.4}y^2 + \frac{1.3.5}{2.4.6}y^3 \ldots\ldots$

Answer: A

Watch Video Solution

EXERCISE 2 (SPECIAL TYPE QUESTIONS) SET - 1

1. I : The coefficient of x^2 in $\left(\sqrt{x}^3 + 2/x\right)^6$ is 60.

II : The coefficient of x^{-6} in $\left(x^4 - 1/x^2\right)^{15}$ is -1365.

A. only I is true

B. only II is true

C. both I and II are true

D. neither I nor II true

Answer: C

View Text Solution

2. If $\left(7+4\sqrt{3}\right)^n = I + F$ where I and n are +ve integers and F is +ve proper fraction, then $(I+F)(1-F) =$

A. only I is true

B. only II is true

C. both I and II are true

D. neither I nor II true

Answer: A

Watch Video Solution

3. I : $\frac{C_1}{C_2} + 2\frac{C_2}{C_1} + 3.\ \frac{C_3}{C_2} + \ldots\ldots + n.\ \frac{C_n}{C_{n-1}} = \frac{n(n+1)}{2}$

II : $C_0 + \frac{C_1}{2} + \frac{C_2}{3} + \ldots. + \frac{C_n}{n+1} = \frac{2^{n+1}-1}{n+1}$

A. only I is true

B. only II is true

C. both I and II are true

D. neither I nor II true

Answer: C

View Text Solution

4. I : The coefficient of x^{24} in $\left(1+3x+6x^2+10x^3+\ldots.\infty\right)^{2/3}$ is 25.

II : The coefficient of x^7 in $\left(1+2x+3x^2+4x^2+\ldots..\infty\right)^{-3}$ is 3

A. only I is true

B. only II is true

C. both I and II are true

D. neither I nor II true

Answer: A

View Text Solution

EXERCISE 2 (SPECIAL TYPE QUESTIONS) SET - 2

1. If ath term is independent of x in $\left(\sqrt{x}/7-\sqrt{5}/x^2\right)^{10}$, bth term is independent of x in $\left(7x^{-1/3}-3x^{1/2}\right)^{25}$ and cth term is independent of x in $\left(3x^2/7+21/4x\right)^9$ then , the ascending order of `a, b, c is

A. a, b, c

B. b, c, a

C. c, a, b

D. a, c, b

Answer: D

View Text Solution

2. If ath , bth , cth terms are the middle terms in the expansion of $(x+1/x)^{10}$, $(a/x-x/a)^{12}$, $\left(x^2-1/x^2\right)^8$ then the ascending order of `a, b, c is

A. a, b, c

B. b, c, a

C. c, a, b

D. a, c, b

Answer: C

View Text Solution

3. The binomial coefficients which are in decreasing order are

A. ${}^{15}C_5, {}^{15}C_6, {}^{15}C_7$

B. ${}^{15}C_{10}, {}^{15}C_9, {}^{15}C_5$

C. ${}^{15}C_6, {}^{15}C_7, {}^{15}C_8$

D. ${}^{15}C_7, {}^{15}C_6, {}^{15}C_5$

Answer: D

View Text Solution

EXERCISE 2 (SPECIAL TYPE QUESTIONS) SET - 3

1. Match the following.

I. The coefficient of x^{-4} in $(2x - 3/x)^8$ is	a) ${}^{17}C_{10}5^7$
II. The coefficient of x^7 in $\left(3x^2/7 + 4/5x^3\right)^{11}$ is	b) ${}^{11}C_3(3/7)^5(4/5)^3$
III. The coefficient of x in $\left(5x^3 - 1/x^2\right)^{17}$ is	c) ${}^8C_6 2^2 3^6$

A. a, b, c

B. b, c, a

C. c, a, b

D. c, b, a

Answer: D

View Text Solution

2. Match the following.

I. $C_0 + 3.\ C_1 + 5.\ C_2 + \ldots\ldots (2n+1).\ C_n =$ a) $(n$

II. $3.\ C_0 + 7.\ C_1 + 11.\ C_2 + \ldots. + (4n+3).\ C_n =$ b) $(2$

III. $C_0 + 4.\ C_1 + 7.\ C_2 + \ldots. (n+1)\text{terms} =$ c) $(2n$

IV. $(3n+2)^n C_0 + (3n-1)^n C_1 + (3n-4)^n C_2 + \ldots\ldots + ({}^nC_n) =$ d) $(3$

A. a, b, c, d

B. d, c, b, a

C. a, c, d, b

D. d, a, b, c

Answer: A

View Text Solution

3. Match the following.

I. $1 + \frac{1}{3} + \frac{1.3}{3.6} + \frac{1.3.5}{3.6.9} + \ldots\ldots =$ a) $\sqrt{2}$

II. $1 + \frac{1}{4} + \frac{1.3}{4.8} + \frac{1.3.5}{4.8.12} =$ b) $2\sqrt{2}$

III. $1 + \frac{2}{6} + \frac{2.5}{6.12} + \frac{2.5.8}{6.12.18} + \ldots\ldots =$ c) $\sqrt{3}$

IV. $1 + \frac{3}{4} + \frac{3.5}{4.8} + \frac{3.5.7}{4.8.12} + \ldots\ldots. =$ d) $\sqrt[3]{4}$

A. a, b, c, d

B. d, c, b, a

C. a, c, d, b

D. c, a, d, c

Answer: D

View Text Solution

4. The correct matching of List I from List II is

List I

A) $(1-x)^{-n}$

B) $(1+x)^{-n}$

C) if $x > 1$ then $1 + \frac{1}{x} + \frac{1}{x^2} + \ldots$ is

D) if $|x| > 1$, then $1 - \frac{2}{x^2} + \frac{3}{x^4} - \frac{4}{x^6} + \ldots.$ is

List II

i) $x/(x+1)$

ii) $1 - nx + \frac{n(n+1)}{2!}x^2 -$

iii) $1 + nx + \frac{n(n+1)}{2!}x^2 +$

iv) $\frac{x}{x-1}$

v) $x^4/(x^2+1)^2$

vi) $x^4/(x^2-1)^2$

A. $\begin{matrix} A & B & C & D \\ i & iii & iv & v \end{matrix}$

B. $\begin{matrix} A & B & C & D \\ ii & iii & iv & v \end{matrix}$

C.
A	B	C	D
iii	ii	iv	v

D.
A	B	C	D
ii	iii	i	v

Answer: C

View Text Solution

EXERCISE 2 (SPECIAL TYPE QUESTIONS) SET - 4

1. A : If the coefficients of 5th, 6th , 7th terms of $(1+x)^n$ are in A.P. then $n = 7 \text{ or } 14.$

R : If the coefficients of rth, $(r+1)th$, $(r+2)th$ terms of $(1+x)^n$ are in A.P. then $n^2 - (4r+1)n + 4r^2 = 2.$

A. Both A and R are true and R is the correct explanation of A

B. Both A and R true but R is not correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A

View Text Solution

2. A: If $\left(5+\sqrt{24}\right)^{n}=I+F$ where, I, n are positive integers, $0<F<1$ then I is an odd integer and $(I+F)(1-F)=1.$

R : If $\left(a+\sqrt{b}\right)^{=}I+F$ where I,n are positive integers, $0<F<1, a^{2}-b=1$ then

i) I is an odd positive integer

ii) $(I+F)(1-F)=1.$

A. Both A and R are true and R is the correct explanation of A

B. Both A and R true but R is not correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A

View Text Solution

3. A : $3.\ C_0 + 7.\ C_1 + 11.\ C_2 + \ldots. + (4n+3).\ C_n = (2n+3)2^n.$

R :

$a.\ C_0 + (a+d).\ C_1 + (a+2d).\ C_2 + \ldots..\ + (a+nd).\ C_n - (2a+nd).\ 2$

A. Both A and R are true and R is the correct explanation of A

B. Both A and R true but R is not correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A

View Text Solution

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

R :

$C_0 + \frac{C_1}{2}x.\ + \frac{C_2}{3}x^2 + \frac{C_3}{4}x^3 + \ldots. + \frac{C_n}{n+1}.\ x^n = \frac{(1+x)^{n+1} - 1}{(n+1)x}$

A. Both A and R are true and R is the correct explanation of A

B. Both A and R true but R is not correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A

View Text Solution