10. If represent the terms in the expansion of , then

(a) (b)

(c) (d)

11. The number of non-zero terms in the expansion of is **[EAMCET 1991]**

(a) 9 (b) 0
(c) 5 (d) 10

12. The greatest integer which divides the number , is **[MP PET 1998]**

(a) 100 (b) 1000
(c) 10000 (d) 100000

13. The approximate value of $(1.0002)^{3000}$ is **[EAMCET 2002]**

(a) 1.6 (b) 1.4
(c) 1.8 (d) 1.2

14. The positive integer just greater than $(1 + 0.0001)^{10000}$ is **[AIEEE 2002]**

(a) 4 (b) 5
(c) 2 (d) 3

15. The last digit in is **[Karnataka CET 2004]**

(a) 7 (b) 9
(c) 1 (d) 3

General term, Coefficient of any power of *x*, Independent term, Middle term and Greatest term and Greatest coefficient

1. term in expansion of is

(a) (b)

(c) (d) None of these

2. If the ratio of the coefficient of third and fourth term in the expansion of is 1 : 2, then the value of n will be

(a) 18 (b) 16
(c) 12 (d) – 10

3. If the coefficients of term and term are equal in the expansion of , then the value of r will be **[RPET 1985, 97; Kerala (Engg.) 2001; MP PET 2002]**

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

4. term in the expansion of is

(a)

(b)

(c)

(d) None of these

5. term in the expansion of is

(a) (b)

(c) (d)

6. In if the ratio of term from the beginning to the term from the end is , then

(a) 7 (b) 8
(c) 9 (d) None of these

7. If coefficient of and terms in the expansion of are equal, then value of r is **[RPET 1995, 2003; UPSEAT 2001]**

(a) 5 (b) 6
(c) 4 (d) 3

8. If occurs in the term in the expansion of , then **[MP PET 1995; Pb. CET 2002]**

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

9. If the term in the expansion of has the same power of a and b, then the value of r is

(a) 9 (b) 10
(c) 8 (d) 6

10. If the third term in the binomial expansion of is , then the rational value of m is

(a) 2 (b)
(c) 3 (d) 4

11. The first 3 terms in the expansion of are 1, $6x$ and $16x^2$. Then the value of a and n are respectively **[Kerala (Engg.) 2002]**

(a) 2 and 9 (b) 3 and 2
(c) 2/3 and 9 (d) 3/2 and

12. If the coefficients of terms of are in A.P., then r = **[Pb. CET 2002]**

(a) 6 (b) 7
(c) 8 (d) 9

13. Coefficient of x in the expansion of is **[Orissa JEE 2004]**

(a) (b)

(c) (d)

14. If the coefficients of , and terms in the expansion of are in A.P., then **[AIEEE 2005]**

(a)

(b)

(c)

(d) None of these

15. In the expansion of ,the coefficient of x^{-10} will be

(a) (b)

(c) (d)

16. The ratio of the coefficient of terms and in the binomial expansion of will be

(a) (b)

(c) (d) None of these

17. If A and B are the coefficients of in the expansions of and respectively, then **[MP PET 1999; Pb. CET 2004]**

(a) (b)

(c) (d) None of these

18. If the expansion of , the coefficient of y will be **[MNR 1983]**

(a) (b)

(c) (d)

19. If p and q be positive, then the coefficients of and in the expansion of will be **[MNR 1983; AIEEE 2002]**

(a) Equal
(b) Equal in magnitude but opposite in sign
(c) Reciprocal to each other
(d) None of these

20. In the expansion of , the constant term is **[AMU 1982; MP PET 1984; MNR 1979]**

(a) – 20 (b) 20
(c) 30 (d) – 30

21. In the expansion of , the coefficient of is **[MP PET 1985]**

(a) –1680 (b) 1680
(c) 3360 (d) 6720

22. In the expansion of , the coefficient of is **[IIT 1983; EAMCET 1985; DCE 2000; RPET 2001; UPSEAT 2002; J & K 2005]**

(a) (b)

(c) (d) None of these

23. If the coefficients of , and terms in the expansion of be in A.P., then n = **[Roorkee 1984; Pb. CET 1999]**

(a) 7 only (b) 14 only
(c) 7 or 14 (d) None of these

24. The coefficient of in the expansion of is **[MNR 1975]**

(a) – 56 (b) 56
(c) – 14 (d) 14

25. The coefficient of in the expansion of will be **[IIT 1967; RPET 1996; Pb. CET 2003]**

(a) (b)

(c) (d)

26. The coefficient of in the following expansion is

(a) (b)

(c) (d)

27. The coefficient of in the expansion of is **[MP PET 1994]**

(a) (b)

(c) (d)

28. If the coefficients of and in are equal, then n is **[EAMCET 1983; Kurukshetra CEE 1998; DCE 2000; RPET 2001; UPSEAT 2001]**

(a) 56 (b) 55
(c) 45 (d) 15

29. The coefficient of in the expansion of is **[MP PET 1997; Pb. CET 2001]**

(a) 14 (b) 21
(c) 28 (d) 35

30. If in the expansion of , the coefficient of x and are 3 and – 6 respectively, then m is **[IIT 1999; MP PET 2000]**

(a) 6 (b) 9
(c) 12 (d) 24

31. If occurs in the expansion of then the coefficient of is **[UPSEAT 1999]**

(a) (b)

(c) (d) None of these

32. If coefficients of 2^{nd}, 3^{rd} and 4^{th} terms in the binomial expansion of are in A.P., then is equal to **[RPET 1999; UPSEAT 2002]**

(a) – 7 (b) 7
(c) 14 (d) – 14

33. In the expansion of the coefficient of is **[MP PET 2000]**

(a) (b)

(c) 210 (d) 310

34. If coefficients of term and term are equal in the expansion of then the value of r will be **[UPSEAT 1999]**

(a) 14 (b) 15
(c) 13 (d) 16

35. If the coefficient of 4^{th} term in the expansion of is 56, then n is **[AMU 2000]**

(a) 12 (b) 10
(c) 8 (d) 6

36. The coefficient of in the expansion of is **[MP PET 2001]**

(a) – 455 (b) – 105
(c) 105 (d) 455

37. The coefficient of in the expansion of is **[UPSEAT 2001]**

(a) (b)

(c) (d)

38. If the coefficients of second, third and fourth term in the expansion of are in A.P., then is equal to **[AMU 2001; MP PET 2004]**

(a) – 1 (b) 0
(c) 1 (d) 3/2

39. The coefficient of in the expansion of is **[Kerala (Engg.) 2001]**

(a) 512 (b) – 512
(c) 521 (d) 251

40. If the coefficients of and in the expansion of are the same, then the value of a is **[DCE 2001]**

(a) (b)

(c) (d)

41. If the second, third and fourth term in the expansion of are 240, 720 and 1080 respectively, then the value of n is **[Kurukshetra CEE 1991; DCE 1995, 2001]**

(a) 15 (b) 20
(c) 10 (d) 5

42. In the expansion of the coefficient of p^{th} and terms are respectively p and q. Then **[EAMCET 2002]**

(a) (b)

(c) (d)

43. Coefficient of in the expansion of is **[UPSEAT 2002]**

(a) (b)

(c) – 7 (d) 7

44. The coefficient of in the expansion of is **[DCE 2002]**

(a) 18 (b) 6
(c) 12 (d) 10

45. The coefficient of in the expansion of is **[Karnataka CET 2003; Pb. CET 2000]**

(a) (b)

(c) (d)

46. If in the expansion of , the coefficients of and be equal, then r is equal to **[UPSEAT 2004]**

(a) 9 (b) 10
(c) 11 (d) 12

47. The term independent of x in the expansion of will be **[IIT 1965; BIT Ranchi 1993; KCET 2000; UPSEAT 2001]**

(a) 3/2 (b) 5/4
(c) 5/2 (d) None of these

48. The term independent of x in the expansion of will be **[Roorkee 1985]**

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

49. In the expansion of ,the term independent of x is

[MNR 1981; AMU 1983; JMI EEE 2001]

(a) (b)

(c) (d) None of these

50. The term independent of x in is **[RPET 1985]**

(a) – 7930 (b) – 495
(c) 495 (d) 7920

51. In the expansion of , the term independent of is

[MP PET 1993; Pb. CET 2002]

(a) (b)

(c) (d)

52. The term independent of x in the expansion of is

[EAMCET 1982; MP PET 2003]

(a) 1 (b) –1
(c) – 48 (d) None of these

53. The term independent of x in the expansion of is

[MNR 1995]

(a) (b)

(c) (d)

54. The term independent of x in the expansion is

[Roorkee 1981; RPET 1990, 95; Pb. CET 2000]

(a) (b)

(c) (d)

55. The term independent of x in the expansion of is

[Pb. CET 1999]

(a) 4320 (b) 216
(c) – 216 (d) – 4320

56. In the expansion of , the term independent of x is

[MP PET 2001]

(a) 10^{th} (b) 9^{th}
(c) 8^{th} (d) 7^{th}

57. In the expansion of the term independent of x is

[Karnataka CET 2001]

(a) Non existent (b)
(c) 2268 (d) – 2268

58. If the middle term in the expansion of is , then

(a) 10 (b) 12
(c) 14 (d) None of these

59. The middle term in the expansion of is

[BIT Ranchi 1991; RPET 2002; Pb. CET 1991]

(a) (b)

(c) (d)

60. The term independent of x in the expansion of is **[RPET 1999]**

(a) 153090 (b) 150000
(c) 150090 (d) 153180

61. The coefficient of middle term in the expansion of is

[UPSEAT 2001]

(a) (b)

(c) (d) None of these

62. The middle term in the expansion of is

[DCE 2002]

(a) (b)

(c) (d)

63. The greatest coefficient in the expansion of is

[BIT Ranchi 1992]

(a) (b)

(c) (d)

64. The greatest term in the expansion of is

(a) (b)

(c) (d) None of these

65. If n is even positive integer, then the condition that the greatest term in the expansion of may have the greatest coefficient also, is

(a) (b)

(c) (d) None of these

66. The interval in which x must lie so that the greatest term in the expansion of has the greatest coefficient, is

(a) (b)

(c) (d) None of these

67. The greatest coefficient in the expansion of is **[RPET 1997]**

(a) (b)

(c) (d)

68. The coefficient of in the expansion of is **[MNR 1993; RPET 2001; DCE 1998]**

(a) (b)

(c) (d)

69. The coefficient of in the expansion of is

(a) (b)

(c) (d) None of these

70. The term independent of x in the expansion of

is **[EAMCET 1989]**

(a) (b)

(c) (d) None of these

71. The coefficient of in the expansion of is **[IIT Screening 2003]**

(a) (b)

(c) (d)

72. The coefficient of in the expansion of is **[EAMCET 2003]**

(a) – 83 (b) – 82

(c) – 81 (d) 0

73. The coefficient of in expansion of is **[AIEEE 2004]**

(a) (b)

(c) (d)

74. The middle term in the expansion of , is **[MP PET 1995]**

(a) (b)

(c) (d) None of these

75. In the expansion of the coefficient of is **[Kerala (Engg.) 2005]**

(a) 144 (b) 288

(c) 216 (d) 576

(e) $(3)(2^{11})$

76. The middle term in the expression of is **[Karnataka CET 2005]**

(a) (b)

(c) (d)

Properties of binomial coefficients

1. **[MP PET 1982]**

(a) (b)

(c) (d) None of these

2. =

[BIT Ranchi 1986]

(a) (b)

(c) (d) None of these

3.

(a) n (b) $1/n$

(c) (d)

4. If then

=

[MP PET 1985; Karnataka CET 1995; MNR 1999]

(a) (b)

(c) (d) None of these

5. If , then

[BIT Ranchi 1986; RPET 1996, 97]

(a) (b)

(c) (d)

6.

[RPET 1995; MP PET 2002; Orissa JEE 2005]

(a) (b)

(c) (d)

7. = **[RPET 1999]**

(a) (b)

(c) (d) None of these

8. **[RPET 1996]**

(a) (b)

(c) (d) None of these

9.

[AMU 2005]

(a) ; for all even values of n

(b) ; for all values of n *i.e.*, all even odd values

(c) 0

(d) None of these

10. The sum to terms of the following series

..... is

(a) (b)

(c) (d) None of these

11. If a and d are two complex numbers, then the sum to terms of the following series

is

(a) (b)

(c) 0 (d) None of these

12. If then **[IIT 1966]**

(a) (b)

(c) (d) None of these

13. The value of is equal to **[Karnataka CET 2000]**

(a) (b)

(c) (d)

14. In the expansion of the sum of coefficients of odd powers of x is **[MP PET 1986, 93, 2003]**

(a) (b)

(c) (d)

15. is equal to **[MNR 1991; RPET 1995; UPSEAT 2000]**

(a) (b)

(c) 0 (d)

16. The sum of all the coefficients in the binomial expansion of is **[Bihar CEE 1994]**

(a) 1 (b) 2

(c) – 1 (d) 0

17. If the sum of the coefficients in the expansion of is 128 then the greatest coefficient in the expansion of is

(a) 35 (b) 20

(c) 10 (d) None of these

18. If , then the expression has the value **[RPET 1986, 99; UPSEAT 2003]**

(a) 32 (b) 63

(c) 64 (d) None of these

19. If n is an integer greater than 1, then **[IIT 1972]**

(a) (b) 0

(c) (d)

20. The sum of the coefficients of even power of x in the expansion of is **[EAMCET 1988]**

(a) 256 (b) 128

(c) 512 (d) 64

21. Coefficients of in the expansion of

(a) (b)

(c) (d) None of these

22. If the sum of the coefficients in the expansion of vanishes, then the value of is **[IIT 1991; Pb. CET 1988]**

(a) 2 (b) –1
(c) 1 (d) – 2

23. If , then equals

(a) *nxy* (b)
(c) (d) None of these

24. The value of is

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

25. The sum of the last eight coefficients in the expansion of is

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

26. If , then the value of will be **[MP PET 1996; RPET 1997; DCE 1995; AMU 1995; EAMCET 2001; IIT 1971]**

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

27. The value of is **[MP PET 1996]**

(a) 15 (b) – 15
(c) 0 (d) 51

28. **[MP PET 1999; EAMCET 1992]**

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

29. If , then equals **[RPET 1996]**

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

30. If , then the value of is **[RPET 1997]**

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

31. The number 111.....1 (91 times) is **[UPSEAT 1999]**

(a) Not a prime (b) An even number
(c) Not an odd number (d) None of these

32. If are the binomial coefficients, then equals **[AMU 1999]**

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

33. The sum of coefficients in the expansion of is **[RPET 2000]**

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

34. In the expansion of the sum of the coefficient of odd powers of x is **[UPSEAT 2001; Pb. CET 2004]**

(a) 0 (b)
(c) (d)

35. is **[AMU 2001]**

(a) Less than (b) Greater than
(c) Less than (d) Greater than

36. The sum of coefficients in is **[Kurukshetra CEE 2001]**

(a) – 1 (b) 1
(c) 0 (d)

37. The sum of coefficients in the expansion of is **[EAMCET 2002]**

(a) 2 (b)
(c) (d)

38. The sum of the coefficients in the expansion of is **[Karnataka CET 2003]**

(a) 7 (b) 8
(c) – 1 (d) 1

39. If for , then **[EAMCET 2000]**

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

40. In the expansion of , the sum of the coefficient of the terms is **[RPET 1992, 97; Kurukshetra CEE 2000]**

(a) 80 (b) 16
(c) 32 (d) 64

41. **[Orissa JEE 2004]**

(a) (b)

(c) (d) None of these

42. If and , then is equal to

[AIEEE 2004]

(a) (b)

(c) (d)

43. The value of is **[Kerala (Engg.) 2005]**

(a) (b) e

(c) (d)

(e)

44. What is the sum of the coefficients of

[Orissa JEE 2005]

(a) 1 (b) 0

(c) -1 (d) None of these

Binomial theorem for any index

1. The fourth term in the expansion of will be

[RPET 1989]

(a) (b)

(c) (d)

2. Cube root of 217 is

(a) 6.01 (b) 6.04

(c) 6.02 (d) None of these

3. The expansion of binomial theorem will be valid, if

(a) (b)

(c) (d) None of these

4. If , then =

[UPSEAT 2002]

(a) (2, 12) (b)

(c) (d) None of these

5. (a)

(b)

(c)

(d)

6.

[DCE 1994; Pb. CET 2002; AIEEE 2002]

(a) (b)

(c) (d) +.....

7. term in the expansion of will be

(a) (b)

(c) (d) None of these

8. In the expansion of , the coefficient of will be

(a) (b)

(c) (d) None of these