Binomial Theorem

Subjects : Maths **Previous Year Questions**

Maths - Section A (MCQ)

1. If the 4th term in the expansion of $\left(mx+\frac{1}{x}\right)^n$ is $\frac{5}{2}$, then that is the value of mn ?

A) -3 **B)** 3 **C)** 6 **D)** 12

2. In a binomial expansion of $(x+y)^{2n+1}(x-y)^{2n+1}$, the sum of middle terms is zero. What is the value of $\left(\frac{x^2}{y^2}\right)$?

A) 1 **B)** 2 **C)** 4 **D)** 8

3. In the expansion of $(1+x)^p(1+x)^q$, if the coefficient of x^3 is 35 , then what is the value of $(p+q)$?

A) 5 **B)** 6 **C)** 7 **D)** 8

4. What is the remainder when 7^n-6n is divided by 36 for $n=100$?

A) 0 **B)** 1 **C)** 2 **D)** 6

5. If the sixth term in the binomial expansion of $\left(x^{-\frac{8}{3}}+x^2\log_{10}x\right)^8$ is 5600 , then what is the value of x ?

A) 6 **B)** 8 **C)** 9 **D)** 10

6. How many terms are there in the expansion of $(3x-y)^4(x+3y)^4$?

A) 9 **B)** 12 **C)** 15 **D)** 17

7. A set S contains (2n +1) elements. There are 4096 subset of S which contain at most n elements. what is n equal to

A) 5 **B)** 6 **C)** 7 **D)** 8

8. Let $(1+x)^n=1+T_1x+T_2x^2+T_3x^3+...+T_nx^n$
What is $T_1+T_2+T_3+...+T_n$ equal to ?

A) 2^n **B)** 2^n-1 **C)** 2^{n-1} **D)** 2^n+1

9. How many terms are there in the expansion of $\left(1+\frac{2}{x}\right)^9\left(1-\frac{2}{x}\right)^9$?

A) 9 **B)** 10 **C)** 19 **D)** 20

10. What is $\sum_{r=0}^{n}2^rC(n,r)$ equal to?

A) 2^n **B)** 3^n **C)** 2^{2n} **D)** 3^{2n}

11. What is the coefficient of the middle term in the expansion of $(1+4x+4x^2)^5$?

A) 8064 **B)** 4032 **C)** 2016 **D)** 1008

12. The term independent of x in the binomial expansion of $\left(\frac{2}{x^2}-\sqrt{x}\right)^{10}$ is equal to

A) 180 B) 120 C) 90 D) 72

13. If $(1+2x-x^2)^6 = a_0 + a_1x + a_2x^2 + \ldots + a_{12}x^{12}$, then what is $a_0 - a_1 + a_2 - a_3 + a_4 - \ldots + a_{12}$ equal to?

A) 32 B) 64 C) 2048 D) 4096

14. What is the number of terms in the expansion of $[(2x-3y)^2\ (2\mathrm{x}+3\mathrm{y})^2]^2$?

A) 4 B) 5 C) 8 D) 16

15. In the expansion of $(1+x)^{43}$, if the coefficients of $(2r+1)^{\mathrm{th}}$ and $(\mathrm{r}+2)^{\mathrm{th}}$ terms are equal, then what is the value of $\mathrm{r}(\mathrm{r} \neq 1)$?

A) 5 B) 14 C) 21 D) 22

16. What is the number of non-zero terms in the expansion of $(1+2\sqrt{3}x)^{11} + (1-2\sqrt{3}x)^{11}$ (after simplification)?

A) 4 B) 5 C) 6 D) 11

17. The value of $[\mathrm{C}(7,0)+\mathrm{C}(7,1)]+[\mathrm{C}(7,1)+\mathrm{C}(7,2)]+\ldots..+[\mathrm{C}(7,6)+\mathrm{C}(7,7)]$ is

A) 254 B) 255 C) 256 D) 257

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

A) 202 B) 101 C) 51 D) 50

19. If the constant term in the expansion of $\left(\sqrt{x}-\frac{k}{x^2}\right)^{10}$ is 405 , then what can be the values of k ?

A) ± 2 B) ± 3 C) ± 5 D) ± 9

20. What is the coefficient of the middle term in the binomial expansion of $(2+3\mathrm{x})^4$?

A) 6 B) 12 C) 108 D) 216

21. If the coefficients of a^{m} and a^{n} in the expansion of $(1+a)^{\mathrm{m+n}}$ are α and β, then which one of the following is correct?

A) $\alpha = 2\beta$ B) $\alpha = \beta$ C) $2\alpha = \beta$ D) $\alpha = (\mathrm{m}+\mathrm{n})\beta$

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

A) 2^{26} B) 2^{49} C) 2^{50} D) 2^{51}

23. What is the coefficient of x^{10} in the expansion of $(1-x^2)^{20}\left(2-x^2-\frac{1}{x^2}\right)^{-5}$?

A) -1 B) 1 C) 10 D) Coefficient of x^{10} does not exist

24. Let $(1+x)^n = 1 + T_1x + T_2x^2 + T_3x^3 + \ldots + T_nx^n$
What is $T_1 + 2T_2 + 3T_3 + \ldots + nT_n$ equal to?

A) 0 B) 1 C) 2^{n} D) $n2^{n-1}$

25. If $C_0, C_1, C_2, \ldots, C_n$ are the coefficients in the expansion of $(1+x)^n$, then what is the value of $C_1 + C_2 + C_3 + \ldots + C_n$?

A) 2^n B) $2^n - 1$ C) 2^{n-1} D) $2^n - 2$

26. What is the sum of the last five coefficients in the expansion of $(1+x)^9$ when it is expanded in ascending powers of x ?

A) 256 B) 512 C) 1024 D) 2048

27. The remainder obtained when $1! + 2! + \ldots + 200!$ is divided by 14 is

A) 3 **B)** 4 **C)** 5 **D)** None of the above

28. The coefficient of x^{10} in the expansion of $1+(1+x)+...+(1+x)^{20}$ is

A) ${}^{19}C_9$ **B)** ${}^{20}C_{10}$

C) ${}^{21}C_{11}$ **D)** ${}^{22}C_{12}$

29. If $C_0, C_1, C_2, ..., C_{10}$ represent the binomial coefficients in the expansion of $(1+x)^{10}$, then $C_0C_6 + C_1C_7 + C_2C_8 + C_3C_9 + C_4C_{10} =$

A) 9690 **B)** 4845 **C)** 1615 **D)** 3230

30. The coefficient of xy^2z^3 in the expansion of $(x-2y+3z)^6$ is

A) 6480 **B)** 3240 **C)** 1620 **D)** 810

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Maths - Section A (MCQ)

1 - B	2 - A	3 - C	4 - B	5 - D	6 - C	7 - B	8 - B	9 - B	10 - B
11 - A	12 - A	13 - B	14 - B	15 - B	16 - C	17 - A	18 - C	19 - B	20 - D
21 - B	22 - B	23 - A	24 - D	25 - B	26 - A	27 - C	28 - C	29 - B	30 - A