DPP
DAILY PRACTICE PROBLEMS

Class : XIth **Subject :Maths**
Date : **DPP No. :3**

Topic :-Binomial Theorem

1. If $(1+x)^n = C_0 + C_1x + C_2x^2 + ... + C_nx^n$, then the value of $C_0 + 2C_1 + 3C_2 + ... + (n+1)C_n$ will be
   a) $(n+2)2^{n-1}$
   b) $(n+1)2^n$
   c) $(n+1)2^{n-1}$
   d) $(n+2)2^n$

2. In the expansion of $\left(x^3 - \frac{1}{x^2}\right)^n, n \in N$, if the sum of the coefficients of x^5 and x^{10} is 0, then $n =$

   a) 25 b) 20 c) 15 d) None of these

3. In the expansion of $(1 + x + x^2 + x^3)^6$, then coefficient of x^{14} is

   a) 130 b) 120 c) 128 d) 125

4. The 14th term from the end in the expansion of $(\sqrt{x} - \sqrt{y})^{17}$ is

   a) ${}^{17}C_5x^6(-\sqrt{y})^5$ b) ${}^{17}C_6(\sqrt{x})^{11}y^3$ c) ${}^{17}C_4x^{13/2}y^2$ d) None of these

5. The sum of the coefficients in the expansion of $(1 + 2x + 3x^2 + ... + nx^n)^2$ is

   a) $\sum 1$ b) $\sum n$ c) $\sum n^2$ d) $\sum n^3$

6. If a_k is the coefficient of x^k in the expansion of $(1 + x + x^2)^n$ for $k = 0, 1, 2, ..., 2n$ then

   a) $-a_0$ b) 3^n c) $n \cdot 3^{n+1}$ d) $n \cdot 3^n$

7. The coefficient of x^n in the polynomial $(x + {}^nC_0)(x + 3\,{}^nC_1)(x + 5\,{}^nC_2)...[x + (2n+1)\,{}^nC_n]$

   a) $n.2^n$ b) $n.2^{n+1}$ c) $(n+1)2^n$ d) $n.2^n + 1$

8. ${}^{n-2}C_r + 2^{n-2}C_{r-1} + {}^{n-2}C_{r-2}$ equals

a) ${}^{n+1}C_r$ b) ${}^{n}C_r$ c) ${}^{n}C_{r+1}$ d) ${}^{n-1}C_r$

9. For $|x| < 1$, the constant term in the expansion of $\frac{1}{(x-1)^2(x-2)}$ is

a) 2 b) 1 c) 0 d) $-\frac{1}{2}$

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

a) $9a^2$ b) $10a^3$ c) $10a^2$ d) $10a$

11. $\frac{1}{n!} + \frac{1}{2!(n-2)!} + \frac{1}{4!(n-4)!} + \ldots$ is equal to

a) $\frac{2^{n-1}}{n!}$ b) $\frac{2^n}{(n+1)!}$ c) $\frac{2^n}{n!}$ d) $\frac{2^{n-2}}{(n-1)!}$

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

a) $\frac{10!}{5!6!}$ b) $\frac{10!}{(5!)^2}$ c) $\frac{10!}{5!7!}$ d) None of these

13. In the expansion of $\left(\frac{a}{x} + bx\right)^{12}$, the coefficient of x^{-10} will be

a) $12a^{11}$ b) $12b^{11}a$ c) $12a^{11}b$ d) $12a^{11}b^{11}$

14. The coefficient of x^{10} in the expansion of $(1 + x^2 - x^3)^8$, is

a) 476 b) 496 c) 506 d) 528

15. If the $(r+1)^{\text{th}}$ term in the expansion of $\left\{\sqrt[3]{\frac{a}{\sqrt{b}}} + \sqrt{\frac{b}{\sqrt[3]{a}}}\right\}^{21}$ contains a and b to one and the same power, then the value of r, is

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

16. The $(r+1)$th term in the expansion of $(1-x)^{-4}$ will be

a) $\frac{x^r}{r!}$ b) $\frac{(r+1)(r+2)(r+3)}{6}x^r$

c) $\frac{(r+2)(r+3)}{2}x^r$ d) None of these

17. If $y = \frac{1}{3} + \frac{1 \cdot 3}{3 \cdot 6} + \frac{1 \cdot 3 \cdot 5}{3 \cdot 6 \cdot 9} + \ldots$, then the value of $y^2 + 2y$ is

a) 2 b) -2 c) 0 d) None of these

18. Let $S(k) = 1 + 3 + 5 + \ldots + (2k - 1) = 3 + k^2$. Then, which of the following is true?
a) $S(1)$ is correct
b) $S(k) \Longrightarrow S(k+1)$
c) $S(k) \nRightarrow S(k+1)$
d) Principle of mathematical induction can be used to prove the formula

19. The number of irrational terms in the expansion of $(5^{1/6} + 2^{1/8})^{100}$ is

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

20. If the rth term in the expansion of $(x/3 - 2/x^2)^{10}$ contains x^4, then r is equal to
a) 2 b) 3 c) 4 d) 5