DPP
DAILY PRACTICE PROBLEMS

Class : XIth **Subject :Maths**
Date : **DPP No. :5**

Topic :-Binomial Theorem

1. $49^n + 16n - 1$ is divisible by

   a) 3 b) 19 c) 64 d) 29

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

   a) 0 b) 2^{49} c) 2^{50} d) 2^{51}

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

   a) 11 b) 33 c) 66 d) 1000

4. If $\alpha = \frac{5}{2!3} + \frac{5\cdot 7}{3!3^2} + \frac{5\cdot 7\cdot 9}{4!3^2} + \ldots\ldots\ldots$, then $\alpha^2 + 4\alpha$ equal to

   a) 21 b) 23 c) 25 d) 27

5. If $|x| < \frac{1}{2}$, then the coefficient of x^r in the expansion of $\frac{1+2x}{(1-2x)^2}$, is

   a) $r2^r$ b) $(2r-1)2^r$ c) $r2^{2r+1}$ d) $(2r+1)2^r$

6. The coefficient of $x^n y^n$ in the expansion of $\{(1+x)(1+y)(x+y)\}^n$, is

   a) $\sum_{r=0}^{n} C_r^2$ b) $\sum_{r=0}^{n} C_{r+2}^2$ c) $\sum_{r=0}^{n} C_{r+3}^2$ d) $\sum_{r=0}^{n} C_r^3$

7. If $(1+x+x^2)^n = C_0 + C_1 x + C_2 x^2 + \ldots$, then the value of $C_0C_1 - C_1C_2 + C_2C_3 - \ldots$, is

   a) 3^n b) $(-1)^n$ c) 2^n d) None of these

8. If a, b, c are in AP, then the sum of the coefficients of $\{1 + (ax^2 - 2bx + c)^2\}^{1973}$ is

a) -2 b) -1 c) 0 d) 1

9. 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

10. If $n > 1$, then $(1 + x)^n - nx - 1$ is divisible by

a) $2x$ b) x^2 c) x^3 d) x^4

11. The coefficient of $x^6\, a^{-2}$ in the expansion of $\left(\frac{x^2}{a} - \frac{a}{x}\right)^{12}$, is

a) ${}^{12}C_6$ b) $-\ {}^{12}C_5$ c) 0 d) None of these

12. If $(5 + 2\sqrt{6})^n = I + f; n, I \in N$ and $0 \le f < 1$, then I equals

a) $\frac{1}{f} - f$ b) $\frac{1}{1+f} - f$ c) $\frac{1}{1+f} + f$ d) $\frac{1}{1-f} - f$

13. If $n \in N, n > 1$, then value of $E = a - {}^nC_1(a-1) + {}^nC_2(a-2) + \ldots + (-1)^n(a-n)\,{}^nC_n$ is

a) a
b) 0
c) a^2
d) 2^n

14. If a_r is the coefficient of x^{r-1} in $(1 + x)^n + (1 + x)^{n+1} + \ldots + (1 + x)^{n+k}$ $(n < r - 1 \le n + k)$, then $\sum_{r=0}^{n+k+1} (-1)^r a_r$ is equal to

a) 0
b) $n + k + 1$
c) $(n + k + 1)!$
d) ${}^{n+k+1}C_r$

15. The sum of $1 + n\left(1 - \frac{1}{x}\right) + \frac{n(n+1)}{2!}\left(1 - \frac{1}{x}\right)^2 + \ldots\infty$, will be

a) x^n b) x^{-n} c) $\left(1 - \frac{1}{x}\right)^n$ d) None of these

16. If $T_0, T_1, T_2, \ldots, T_n$ represents the terms in the expansion of $(x + a)^n$, then $(T_0 - T_2 + T_4 - \ldots)^2 + (T_1 - T_3 + T_5 - \ldots)^2$ is equal to

a) $(x^2 + a^2)$ b) $(x^2 + a^2)^n$

c) $(x^2+a^2)^{1/n}$ d) $(x^2+a^2)^{-1/n}$

17. If the coefficient of $(2r+1)$th term and $(r+2)$th term in the expansion of $(1+x)^{43}$ are equal, then r is equal to

a) 12 b) 14 c) 16 d) 18

18. If $(1+x)^n = C_0 + C_1x + C_2x^2 + ...C_nx^n$, then $C_0^2 + C_1^2 + C_2^2 + C_3^2 + ... + C_n^2$ is equal to

a) $\frac{n!}{n!n!}$ b) $\frac{(2n)!}{n!n!}$ c) $\frac{(2n)!}{n!}$ d) None of these

19. If n is a positive integer and $C_k = {}^nC_k$, then $\sum_{k=1}^{n} k^3\left(\frac{C_k}{C_{k-1}}\right)^2$ equals

a) $\frac{n(n+1)(n+2)}{12}$ b) $\frac{n(n+1)^2(n+2)}{12}$ c) $\frac{n(n+1)(n+2)^2}{12}$ d) None of these

20. The value of

$1\times2\times3\times4 + 2\times3\times4\times5 + 3\times4\times5\times6 + ...$
$+n(n+1)(n+2)(n+3)$, is

a) $\frac{1}{5}(n+1)(n+2)(n+3)(n+4)(n+5)$

b) $\frac{1}{5}n(n+1)(n+2)(n+3)(n+4)$

c) $\frac{1}{5}n(n+1)(n+2)(n+3)(n+4)$

d) ${}^{n+4}C_5$