DPP

DAILY PRACTICE PROBLEMS

Class : XIth **Subject :Maths**

Date : **DPP No. :9**

Topic :-Binomial Theorem

1. If $(2x^2 - x - 1)^5 = a_0 + a_1x + a_2x^2 + ... + a_{10}x^{10}$, then $a_2 + a_4 + a_6 + a_8 + a_{10}$ is equal to

a) 15 b) 30 c) 16 d) 32

2. If the coefficient of $(r+1)^{\text{th}}$ term in the expansion of $(1+x)^{2n}$ be equal to that of $(r+3)^{th}$ term, then

a) $n - r + 1 = 0$ b) $n - r - 1 = 0$ c) $n + r + 1 = 0$ d) None of these

3. The coefficient of x^{100} in the expansion of $\sum_{j=0}^{200}(1+x)^j$ is

a) $\binom{200}{100}$ b) $\binom{201}{102}$ c) $\binom{200}{101}$ d) $\binom{201}{100}$

4. The value of $\frac{1}{n\,!} + \frac{1}{2\,!(n-2)\,!} + \frac{1}{4\,!(n-4)\,!} + \dots$, is

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

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

a) $\frac{504}{259}$ b) $\frac{450}{263}$ c) $\frac{405}{256}$ d) None of these

6. If $(1+x)^n = C_0 + C_1x + C_2x^2 + ... + C_nx^n$.Then , $C_0C_1 + C_1C_2 + ... + C_{n-1}C_n$ is equal to

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

7. $7^9 + 9^7$ is divided by

a) 128 b) 24 c) 64 d) 72

8. If $n > (8+3\sqrt{7})^{10}$, $n \in N$, then the last value of n is

a) $(8+3\sqrt{7})^{10} - (8-3\sqrt{7})^{10}$
b) $(8+3\sqrt{7})^{10} + (8-3\sqrt{7})^{10}$
c) $(8+3\sqrt{7})^{10} - (8-3\sqrt{7})^{10} + 1$
d) $(8+3\sqrt{7})^{10} - (8-3\sqrt{7})^{10} - 1$

9. The ninth term of the expansion $\left(3x - \frac{1}{2x}\right)^8$ is

a) $\frac{1}{512x^9}$ b) $\frac{-1}{512x^9}$ c) $\frac{-1}{256x^8}$ d) $\frac{1}{256x^8}$

10. If x^{2k} occurs in the expansion of $\left(x + \frac{1}{x^2}\right)^{n-3}$, then

a) $n - 2k$ is a multiple of 2
b) $n - 2k$ is a multiple of 3
c) $k = 0$
d) None of the above

11. The number of terms with integral coefficients in the expansion of $(7^{1/3} + 5^{1/2}x)^{600}$, is

a) 100 b) 50 c) 101 d) None of these

12. The coefficient of $x^3y^4z^5$ in the expansion of $(xy + yz + xz)^6$ is

a) 70 b) 60 c) 50 d) None of these

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

a) $({}^nC_r)^2$ b) ${}^nC_r \cdot {}^nC_{r+1}$ c) ${}^{2n}C_r$ d) ${}^{2n}C_{r+1}$

14. ${}^{20}C_4 + 2 \cdot {}^{20}C_3 + {}^{20}C_2 - {}^{22}C_{18}$ is equal to

a) 0 b) 1242 c) 7315 d) 6345

15. If $y = 3\,x + 6\,x^2 + 10\,x^3 + \ldots$, then $x =$

a) $\frac{4}{3} - \frac{1 \cdot 4}{3^2 \cdot 2} y^2 + \frac{1 \cdot 4 \cdot 7}{3^2 \cdot 3} y^3 \ldots$
b) $-\frac{4}{3} + \frac{1 \cdot 4}{3^2 \cdot 2} y^2 - \frac{1 \cdot 4 \cdot 7}{3^2 \cdot 3} y^3 + \ldots$
c) $\frac{4}{3} + \frac{1 \cdot 4}{3^2 \cdot 2} y^2 + \frac{1 \cdot 4 \cdot 7}{3^2 \cdot 3} y^3 + \ldots$
d) None of these

16. The expression $\{x + (x^2 - 1)^{1/2}\}^5 + \{x - (x^2 - 1)^{1/2}\}^5$ is a polynomial of degree

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

17. The value of $C_0^2 + 3 \cdot C_1^2 + 5 \cdot C_2^2 + \ldots$to $(n+1)$ terms, is

a) ${}^{2n-1}C_{n-1}$

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

c) $2(n+1) \cdot {}^{2n-1}C_{n-1}$

d) ${}^{2n-1}C_n + (2\,n+1)\,{}^{2n-1}C_{n-1}$

18. If $n - {}^1C_r = (k^2-3)\,{}^nC_{r+1}$, then $k \in$

a) $(-\infty, -2)$ b) $[2, \infty)$ c) $[-\sqrt{3}, \sqrt{3}]$ d) $(\sqrt{3}, 2]$

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

a) 51 b) 202 c) 100 d) 50

20. If $(1+x)^n = C_0 + C_1\,x + C_2\,x^2 + \ldots + C_n\,x^n$, thn for n odd, $C_1^2 + C_3^2 + C_5^2 + \ldots + C_n^2$ is equal to

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