DPP
DAILY PRACTICE PROBLEMS

Class : XIth **Subject :Maths**
Date : **DPP No. :1**

Topic :-Binomial Theorem

1. If $(1+x)^{15} = C_0 + C_1x + C_2x^2 + ... + C_{15}x^{15}$, then $C_2 + 2C_3 + 3C_4 + ... + 14C_{15}$ is equal to
   a) 14.2^{14} b) $13.2^{14} + 1$ c) $13.2^{14} - 1$ d) None of these
2. If the coefficients of second, third and fourth terms in the expansion of $(1+x)^{2n}$ are in A.P., then
   a) $2n^2 + 9n + 7 = 0$ b) $2n^2 - 9n + 7 = 0$ c) $2n^2 - 9n - 7 = 0$ d) None of these
3. 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) $(2r+1)2^r$
4. $\binom{30}{0}\binom{30}{10} - \binom{30}{1}\binom{30}{11} + ...\binom{30}{20}\binom{30}{30}$ is equal to
   a) ${}^{30}C_{11}$ b) ${}^{60}C_{10}$ c) ${}^{30}C_{10}$ d) ${}^{65}C_{55}$
5. If $(1 - x + x^2)^n = a_0 + a_1x + a_2x^2 + ... + a_{2n}x^{2n}$, then $a_0 + a_2 + a_4 + ... + a_{2n}$ is equal to
   a) $\frac{3^n+1}{2}$ b) $\frac{3^n-1}{2}$ c) $\frac{3^{n-1}+1}{2}$ d) $\frac{3^{n-1}-1}{2}$
6. If $C_0, C_1, C_2, ...C_n$ denote the binomial coefficient in the expansion of $(1+x)^n$, then $C_0\frac{C_1}{2} + \frac{C_2}{3} + ... + \frac{C_n}{n+1}$ is equal to
   a) $\frac{2^{n+1}-1}{n+1}$ b) $\frac{2^n-1}{n}$ c) $\frac{2^{n-1}-1}{n-1}$ d) $\frac{2^{n+1}-1}{n+2}$
7. If the ratio of the 7th term from the beginning to the seventh term from the end in the expansion of $\left(\sqrt[3]{2} + \frac{1}{\sqrt[3]{3}}\right)^x$ is $\frac{1}{6}$ then x, is
   a) 9 b) 6, 15 c) 12, 9 d) None of these
8. If in the expansion of $\left(x^3 - \frac{1}{x^2}\right)^n, n \in N$, sum of the coefficients of x^5 and x^{10} is zero, then $n =$
   a) 5 b) 10 c) 15 d) 20
9. The range of the values of the term independent of x in the expansion of $\left(x\sin^{-1}\alpha + \frac{\cos^{-1}\alpha}{x}\right)^{10}, \alpha \in [-1,1]$ is
   a) $\left[\frac{{}^{10}C_5 \cdot \pi^{10}}{2^5}, -\frac{{}^{10}C_5\pi^{10}}{2^{20}}\right]$ b) $\left[-\frac{{}^{10}C_5 \cdot \pi^{10}}{2^5}, \frac{{}^{10}C_5 \cdot \pi^{10}}{2^{20}}\right]$

c) $\left[\frac{{}^{10}C_5 \cdot \pi^5}{2^5}, \frac{{}^{10}C_5 \cdot \pi^5}{2^{20}}\right]$ d) $\left[-\frac{{}^{10}C_5 \cdot \pi^5}{2^5}, \frac{{}^{10}C_5 \cdot \pi^5}{2^{20}}\right]$

10. $\binom{30}{0}\binom{30}{10} - \binom{30}{1}\binom{30}{11} + \ldots + \binom{30}{20}\binom{30}{30}$ is equal to

a) ${}^{30}C_{11}$ b) ${}^{60}C_{10}$ c) ${}^{30}C_{10}$ d) ${}^{65}C_{55}$

11. The rth terms in the expansion of $(a + 2n)^n$ is

a) $\frac{n(n+1)\ldots(n-r+1)}{r!}a^{n-r+1}(2x)^r$ b) $\frac{n(n-1)\ldots(n-r+2)}{(r-1)!}a^{n-r+1}(2x)^{r-1}$

c) $\frac{n(n+1)\ldots(n-r)}{r+1}a^{n-r}(x)^r$ d) None of the above

12. The coefficient of t^{24} in the expansion of $(1 + t^2)^{12}(1 + t^{12})(1 + t^{24})$ is

a) ${}^{12}C_6 + 2$ b) ${}^{12}C_5$ c) ${}^{12}C_6$ d) ${}^{12}C_7$

13. The coefficient of x^n in the expansion of $\frac{(1+x)^2}{(1-x)^3}$, is

a) $n^2 + 2n + 1$ b) $2\,n^2 + n + 1$ c) $2\,n^2 + 2\,n + 1$ d) $n^2 + 2\,n + 2$

14. The sum of the coefficient in the expansion of $(1 + x - 3x^2)^{3148}$ is

a) 8 b) 7 c) 1 d) -1

15. If C_r stands for ${}^nC_r$, then the sum of first $(n + 1)$ terms of the series $a\,C_0 - (a + d)C_1 + (a + 2d)C_2 - (a + 3d)C_3 + \ldots$, is

a) $\frac{a}{2^n}$ b) $n\,a$ c) 0 d) None of these

16. The value of $\frac{18^3 + 7^3 + 3 \cdot 18 \cdot 7 \cdot 25}{3^6 + 6 \cdot 243 \cdot 2 + 15 \cdot 181 \cdot 4 + 20 \cdot 27 \cdot 8 + 15 \cdot 9 \cdot 16 + 6 \cdot 3 \cdot 32 + 64}$, is

a) 10 b) 1 c) 2 d) 20

17. The coefficient of x^5 in the expansion of $(1 + x^2)^5(1 + x)^4$, is

a) 30 b) 60 c) 40 d) None of these

18. If $n = 5$, then
$({}^nC_0)^2 + ({}^nC_1)^2 + ({}^nC_2)^2 + \ldots + ({}^nC_5)^2$ is equal to

a) 250 b) 254 c) 245 d) 252

19. The coefficient of x^{50} in the expression $(1 + x)^{1000} + 2\,x(1 + x)^{999} + 3\,x^2(1 + x)^{998} + \ldots + 1001\,x^{1000}$ is

a) ${}^{1000}C_{50}$ b) ${}^{1001}C_{50}$ c) ${}^{1002}C_{50}$ d) ${}^{1000}C_{51}$

20. 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) $-\frac{1}{2}$