DPP
DAILY PRACTICE PROBLEMS

Class : XIth **Subject :Maths**
Date : **DPP No. :4**

Topic :-Binomial Theorem

1. When $32^{(32)^{(32)}}$ is divided by 7, then the remainder is
   a) 2
   b) 8
   c) 4
   d) None of these

2. The value of x, for which the 6th term in the expansion of $\left\{2^{\log_2\sqrt{(9^{x-1}+7)}}+\frac{1}{2^{(1/5)\log_2(3^{x-1}+1)}}\right\}^7$ is 84, is equal to

   a) 4 b) 3 c) 2 d) 5

3. If $P(n)$:$2+4+6+\ldots+(2n), n\in N$, then
   $P(k)=k(k+1)+2$implies
   $P(k+1)=(k+1)(k+2)+2$
   is true for all $k\in N$. So, statement $P(n)=n(n+1)+2$ is true for

   a) $n\geq 1$ b) $n\geq 2$ c) $n\geq 3$ d) None of these

4. The number of terms in the expansion of $(1+2x+x^2)^{20}$, when expanded in descending powers of x, is
   a) 20 b) 21 c) 40 d) 41

5. The binomial coefficients which are in decreasing order are

   a) ${}^{15}C_5,\ {}^{15}C_6,\ {}^{15}C_7$ b) ${}^{15}C_{10},\ {}^{15}C_9,\ {}^{15}C_8$ c) ${}^{15}C_6,\ {}^{15}C_7,\ {}^{15}C_8$ d) ${}^{15}C_7,\ {}^{15}C_6,\ {}^{15}C_5$

6. $10^n+3(4^{n+2})+5$ is divisible by $(n\in N)$

   a) 7 b) 5 c) 9 d) 17

7. $\frac{{}^8C_0}{6} = {}^8C_1 + {}^8C_2 \cdot 6 - {}^8C_3 \cdot 6^2 + \ldots + {}^8C_8 \cdot 6^7$ is equal to

a) 0 b) 6^7 c) 6^8 d) $\frac{5^8}{6}$

8. If the coefficients of the second, third and fourth terms in the expansion of $(1+x)^n$ are in AP, then n is equal to

a) 7
b) 2
c) 6
d) None of these

9. The expansion of $(8-3x)^{3/2}$ in terms of powers of x is valid only if

a) $x > \frac{8}{3}$ b) $|x| < \frac{8}{3}$ c) $x < \frac{3}{8}$ d) $x < \frac{8}{3}$

10. If ${}^nC_0$, ${}^nC_1$, ${}^nC_2 \ldots$ ${}^nC_n$ denote the coefficient of the binomial expansion $(1+x)^n$, then the value of $C_1 + 3C_3 + 5C_5 + \ldots$is

a) $n2^{n-2}$ b) $n2^{n-1}$ c) $(n+1)2^n$ d) $(n+2)2^{n-1}$

11. The value of x in the expansion $[x + x^{\log_{10} x}]^5$, if the third term in the expansion is 1000000, is

a) 10 b) 11 c) 12 d) None of these

12. ${}^nC_0 - \frac{1}{2}{}^nC_1 + \frac{1}{3}{}^nC_2 - \ldots + (-1)^n \frac{{}^nC_n}{n+1}$ is equal to

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

13. The remainder left out when $8^{2n} - (62)^{2n+1}$ is divided by 9, is

a) 0 b) 2 c) 7 d) 8

14. The number of rational terms in the expansion of $\left(\sqrt[3]{4} + \frac{1}{\sqrt[4]{6}}\right)^{20}$, is

a) 3 b) 18 c) 4 d) 16

15. The number of terms in the expansion of $\left(x^2 + 1 + \frac{1}{x^2}\right)^n, n \in N$, is

a) $2n$ b) $3n$ c) $2n+1$ d) $3n+$

16. The digit at the unit place in the number $19^{2005} + 11^{2005} - 9^{2005}$ is

a) 2 b) 1 c) 0 d) 8

17. The coefficient of the middle term in the expansion of $(x + 2y)^6$ is

a) ${}^6C_3$ b) $8({}^6C_3)$ c) $8({}^6C_5)$ d) ${}^6C_4$

18. The coefficient of x^{-17} in the expansion of

$\left(x^4 - \frac{1}{x^3}\right)^{15}$ is

a) ${}^{15}C_{11}$ b) ${}^{15}C_{12}$ c) $-{}^{15}C_{11}$ d) $-{}^{15}C_3$

19. If $\frac{(1-3x)^{1/2} + (1-x)^{5/3}}{\sqrt{4-x}}$ is approximately equal to $a + bx$ for small values of x, then (a,b) is equal to

a) $\left(1, \frac{35}{24}\right)$ b) $\left(1, -\frac{35}{24}\right)$ c) $\left(2, \frac{35}{12}\right)$ d) $\left(2, -\frac{35}{12}\right)$

20. If ${}^{18}C_{15} + 2({}^{18}C_{16}) + {}^{17}C_{16} + 1 = {}^nC_3$, then n is equal to

a) 19 b) 20 c) 18 d) 24