MATHEMATICS

DPP

DAILY PRACTICE PROBLEMS

DPP No. 62

Total Marks : 27

Max. Time : 27 min.

Topic : Binomial Theorem

Type of Questions		**M.M., Min.**
Single choice Objective (no negative marking) Q.1,2,3,4,5,6	**(3 marks, 3 min.)**	**[18, 18]**
Multiple choice objective (no negative marking) Q.7	**(5 marks, 4 min.)**	**[5, 4]**
Subjective Questions (no negative marking) Q.8	**(4 marks, 5 min.)**	**[4, 5]**

1. The largest real value of 'x' such that $\sum_{k=0}^{4}\left(\frac{5^{4-k}}{(4-k)!}\cdot\frac{x^k}{k!}\right) = \frac{8}{3}$ is

(A) $2\sqrt{2} - 5$ (B) $2\sqrt{2} + 5$ (C) $-2\sqrt{2} - 5$ (D) $-2\sqrt{2} + 5$

2. The value of $\sum\sum_{0\le i<j\le n} j\,.\,{}^nC_i$ is equal to

(A) $n\,.\,2^{n-3}$ (B) $n(n+3)\,.\,2^{n-3}$ (C) $(n+3)\,.\,2^{n-3}$ (D) $n(3n+1)\,.\,2^{n-3}$

3. The value of $\frac{1}{81^n} - \frac{10}{81^n}\,{}^{2n}C_1 + \frac{10^2}{81^n}\,{}^{2n}C_2 - \frac{10^3}{81^n}\,{}^{2n}C_3 + \ldots\ldots + \frac{10^{2n}}{81^n}$ is

(A) 2 (B) 0 (C) 1/2 (D) 1

4. If $(1!)^2 + (2!)^2 + (3!)^2 + \ldots\ldots + (99!)^2 + (100!)^2$ is divided by 100, the remainder is

(A) 27 (B) 28 (C) 17 (D) 14

5. $\sum_{r=1}^{n}\left(\sum_{p=0}^{r-1}{}^nC_r\,{}^rC_p\,2^p\right)$ is equal to

(A) $4^n - 3^n + 1$ (B) $4^n - 3^n - 1$ (C) $4^n - 3^n + 2$ (D) $4^n - 3^n$

6. If in the expansion of $\left(x^3 - \frac{2}{\sqrt{x}}\right)^n$ a term like x^2 exists and 'n' is a double digit number, then least value of 'n' is :

(A) 10 (B) 11 (C) 12 (D) 13

7. $\lim_{n\to\infty}{}^nC_x\left(\frac{m}{n}\right)^x\left(1-\frac{m}{n}\right)^{n-x}$ equals to

(A) $\frac{m^x}{x!}\,.\,e^{-m}$ (B) $\frac{m^x}{x!}\,.\,e^{m}$ (C) e^0 (D) $\frac{m^{x+1}}{me^m x!}$

8. Find the sum of the series $\sum_{r=0}^{n}\left(\frac{n-3r+1}{n-r+1}\right)\frac{{}^nC_r}{2^r}$.

Answers Key

1. (A) **2.** (D) **3.** (D) **4.** (C)

5. (D) **6.** (A) **7.** (A)(D) **8.** $\frac{1}{2^n}$