MATHEMATICS

DPP

DAILY PRACTICE PROBLEMS

DPP No. 63

Total Marks : 36

Max. Time : 42 min.

Topic : Binomial Theorem

Type of Questions		**M.M., Min.**
Single choice Objective (no negative marking) Q.,5,6,7,8	**(3 marks, 3 min.)**	**[12, 12]**
Subjective Questions (no negative marking) Q. 1,2,3,4,9,10	**(4 marks, 5 min.)**	**[24, 30]**

1. Find the co-efficient of x^6 in the expansion of $(1 - 2x)^{-5/2}$.

2. Assuming ' x ' to be so small that x^2 and higher powers of ' x ' can be neglected, show that, $\frac{\left(1+\frac{3}{4}x\right)^{-4}(16-3x)^{1/2}}{(8+x)^{2/3}}$ is approximately equal to, $1-\frac{305}{96}x$.

3. Coefficient of x^7 in $(1 - 2x + x^3)^5$

4. (i) Find the coefficient of $a^5 b^4 c^7$ in the expansion of $(bc + ca + ab)^8$.
(ii) Sum of coefficients of odd powers of x in expansion of $(9x^2 + x - 8)^6$

5. If $(1 + x)^{10} = a_0 + a_1x + a_2x^2 + \ldots\ldots + a_{10}x^{10}$, then value of $(a_0 - a_2 + a_4 - a_6 + a_8 - a_{10})^2 + (a_1 - a_3 + a_5 - a_7 + a_9)^2$ is
(A) 2^{10} (B) 2 (C) 2^{20} (D) None of these

6. Sum of the infinite series $\frac{1}{2!}+\frac{1+2}{3!}+\frac{1+2+3}{4!}+\ldots..$ to ∞

(A) $\frac{e}{3}$ (B) e (C) $\frac{e}{2}$ (D) none of these

7. The coefficient of x^6 in series e^{2x} is

(A) $\frac{4}{45}$ (B) $\frac{3}{45}$ (C) $\frac{2}{45}$ (D) None of these

8. Find the sum of the series $\frac{1}{2}-\frac{1}{2\times2^2}+\frac{1}{3\times2^3}-\frac{1}{7\times2^4}+\ldots..$

(A) $\log_e\left(\frac{3}{2}\right)$ (B) $\log_e\left(\frac{2}{3}\right)$ (C) $\log_e\left(\frac{4}{7}\right)$ (D) None of these

9. Sum the series $1+\frac{2^3}{1!}+\frac{3^3}{2!}+\frac{4^3}{3!}+\ldots..$

10. If $y=\left(x-\frac{x^2}{2}+\frac{x^3}{2}-\frac{x^4}{2}+....\text{to}\ \infty\right)$ and $|x| < 1$, prove that $x=\left(y+\frac{y^2}{2!}+\frac{y^3}{3!}..\text{to}\ \infty\right)$.

Answers Key

1. $\frac{15015}{16}$ **3.** 20 **4.** (i) 280 (ii) 2^5 **5.** (A)

6. (C) **7.** (A) **8.** (A) **9.** 15e