MATHEMATICS

DPP DAILY PRACTICE PROBLEMS

DPP No. 77

Total Marks : 26

Max. Time : 28 min.

Topics : Probability, Definite Integration

Type of Questions		M.M., Min.
Single choice Objective (no negative marking) Q.1 to 6	(3 marks, 3 min.)	[18, 18]
Subjective Questions (no negative marking) Q.7 to 8	(4 marks, 5 min.)	[8, 10]

1. A pair of fair dice is rolled together till a sum of either 5 or 7 is obtained. Then the probability that 5 comes before 7,is

(A) $\frac{2}{5}$ (B) $\frac{1}{5}$ (C) $\frac{1}{3}$ (D) $\frac{2}{3}$

2. The sum of the terms of an infinite G.P. is equal to the greatest value of the function, $f(x) = x^3 + 3x - 9$ in the interval $[-2, 3]$ and the difference between the first and the second term is $f'(0)$. Then the first term of the G.P. can be

(A) -9 (B) 27   (C) 9   (D) $\frac{2}{3}$

3. One hundred identical coins, each with probability p, of showing up heads are tossed once. If $0 < p < 1$ and the probability of heads showing on 50 coins is equal to that of heads on 51 coins, then the value of p is

(A) $\frac{1}{2}$ (B) $\frac{49}{101}$ (C) $\frac{50}{101}$ (D) $\frac{51}{101}$

4. If all the letters of the word "SUCCESS" are written down at random in a row, then the probability that no two C's and no two S's occur together is

(A) $\frac{2}{35}$ (B) $\frac{8}{35}$ (C) $\frac{2}{7}$ (D) none of these

5. For $U_n = \int_0^1 x^n (2-x)^n \, dx; \; V_n = \int_0^1 x^n (1-x)^n \, dx \; n \in N$, which of the following statement(s) is/are true?

(A) $U_n = 2^n V_n$ (B) $U_n = 2^{-n} V_n$ (C) $U_n = 2^{2n} V_n$ (D) $U_n = 2^{-2n} V_n$

6. $\int_0^1 x(1-x)^{99} \, dx$ is equal to

(A) $\frac{1}{10100}$ (B) $\frac{1}{5050}$ (C) $\frac{1}{5051}$ (D) none of these

7. The probability of a shooter hitting a target is $\frac{3}{4}$. How many minimum number of times must he fire so that probability of hitting the target at least once is more than 0.99 ?

8. 'A' writes a letter to his friend 'B' and gives it to his son to post it in a letter box, the reliability of his son being $\frac{3}{4}$. The probability that a letter posted will get delivered is $\frac{8}{9}$. At a later date, 'A' hears from 'B' that the letter has not reached him. Find the probability that the son did not post the letter at all.

Answers Key

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

5. (C)   **6.** (A)   **7.** 4   **8.** $\dfrac{3}{4}$