DPP

DAILY PRACTICE PROBLEMS

CLASS : XIIth | SUBJECT : MATHS

DATE : | DPP No. : 6

Topic :-PROBABILITY

1. If the integers m and n are chosen at random between 1 and 100, then the probability that a number of the form $7^m + 7^n$ is divisible by 5 equals -

(A) $\frac{1}{4}$ (B) $\frac{1}{7}$ (C) $\frac{1}{8}$ (D) $\frac{1}{49}$

2. If the letters a, A, b, B, c and C are arranged at random in a row. The probability that the lower case letters appear in alphabetical order, is

(A) $\frac{1}{6}$ (B) $\frac{1}{2}$ (C) $\frac{1}{5}$ (D) $\frac{1}{30}$

3. 5 persons entered the lift cabin on the ground floor of an 8 floor building. Suppose that each of them independently and with equal probability, can leave the cabin at any other floor, starting from the first. The probability that all 5 persons leave at different floors is -

(A) $\left(\frac{5}{8}\right)^5$ (B) $\frac{{}^8C_5}{8^5}$ (C) $\frac{5!}{8^5}$ (D) $\frac{{}^8C_5 5!}{8^5}$

4. A bag contains 5 balls, three red and two white. Balls are randomly removed one at a time without replacement until all the red balls are drawn or all the white balls are drawn. The probability that the last ball drawn is white, is

(A) $\frac{3}{10}$ (B) $\frac{5}{10}$ (C) $\frac{6}{10}$ (D) $\frac{7}{10}$

5. Players A and B alternately toss a biased coin, with A going first. A wins if A tosses a Tail before B tosses a Head; otherwise B wins. If the probability of a head is p, the value of p for which the game is fair to both players, is

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

6. The chance that a 13 card combination from a pack of 52 playing cards is dealt to a player in a game of bridge, in which 9 cards are of the same suit, is

(A) $\frac{4 \cdot {}^{13}C_9 \cdot {}^{39}C_4}{{}^{52}C_{13}}$ (B) $\frac{4! \cdot {}^{13}C_9 \cdot {}^{39}C_4}{{}^{52}C_{13}}$ (C) $\frac{{}^{13}C_9 \cdot {}^{39}C_4}{{}^{52}C_{13}}$ (D) none of these

7. The entries in a two-by-two determinant are integers that are chosen randomly and independently, and, for each entry, the probability that the entry is odd is p. If the probability that the value of the determinant is even is 1/2, then the value of p, is

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

8. A die is thrown a fixed number of times. If probability of getting even number 3 times is same as the probability of getting even number 4 times, then probability of getting even number exactly once is

(A) $\frac{1}{4}$ (B) $\frac{3}{128}$ (C) $\frac{5}{64}$ (D) $\frac{7}{128}$

9. A license plate is 3 letters (of English alphabets) followed by 3 digits. If all possible license plates are equally likely, the probability that a plate has either a letter palindrome or a digit palindrome (or both), is -

(A) $\frac{7}{52}$ (B) $\frac{9}{65}$ (C) $\frac{8}{65}$ (D) none

10. If two subsets A and B of set S containing n elements are selected at random, then the probability that $A \cap B = \phi$ and $A \cup B = S$ is

(A) $\frac{1}{2}$ (B) $\frac{1}{2^n}$ (C) $\left(\frac{3}{4}\right)^4$ (D) $\frac{1}{3^n}$

11. Two cards are drawn from a well shuffled pack of 52 playing cards one by one. If
A : the event that the second card drawn is an ace and
B : the event that the first card drawn is an ace card.
then which of the following is true ?

(A) $P(A) = \frac{4}{17}$; $P(B) = \frac{1}{13}$ (B) $P(A) = \frac{1}{13}$; $P(B) = \frac{1}{13}$

(C) $P(A) = \frac{1}{13}$; $P(B) = \frac{1}{17}$ (D) $P(A) = \frac{16}{221}$; $P(B) = \frac{4}{51}$

12. A fair die is thrown 3 times. The chance that sum of three numbers appearing on the die is less than 11, is equal to

(A) $\frac{1}{2}$ (B) $\frac{2}{3}$ (C) $\frac{1}{6}$ (D) $\frac{5}{8}$

13. If an integer q is chosen at random in the interval $-10 \le q \le 10$, then the probability that the roots of the equation $x^2 + qx + + 1 = 0$ are real is

(A) $\frac{16}{21}$ (B) $\frac{15}{21}$ (C) $\frac{14}{21}$ (D) $\frac{17}{21}$

14. An experiment resulting in sample space as $S = \{a, b, c, d, e, f\}$
with $P(A) = , P(B) = , P(C) = , P(D) = , P(e) =$ and $P(f) = .$
Let three events A, B and C are defined as $A = \{a, c, e,\}$, $B = \{c, d, e, f\}$ and $C = \{b, c, f\}$.
If $P(A/B) = p_1$, $P(B/C) = p_2$, $P(C/A^c) = p_3$ and $P(A^c/C) = p_4$, then the correct order sequance is

(A) $p_1 < p_3 < p_2 < p_4$ (B) $p_1 < p_4 < p_3 < p_2$ (C) $p_1 < p_3 < p_4 < p_2$ (D) $p_3 < p_1 < p_4 < p_2$

15. A box has four dice in it. Three of them are fair dice but the fourth one has the number five on all of its faces. A die is chosen at random from the box and is rolled three times and shows up the face five on all the three occasions. The chance that the die chosen was a rigged die, is -

(A) $\frac{216}{217}$ (B) $\frac{215}{219}$ (C) $\frac{216}{219}$ (D) none

16. Let a red die, a blue die, a green die and a white die are rolled once, the dice being fair. The outcomes on the red, blue, green and white die denote the numbers a, b, c and d respectively. Let E denotes the event that absolute value of $(a - 1)(b - 2)(c - 3)(d - 6) = 1$, then P(E) is

(A) $\frac{1}{324}$ (B) $\frac{1}{648}$ (C) $\frac{2}{324}$ (D) $\frac{1}{162}$

17. A problem in Mathematics is given to three students A, B, C and their respectively probability of solving the problem is and . Probability that the problem is solved is-

(A) $\frac{3}{4}$ (B) $\frac{1}{2}$ (C) $\frac{2}{3}$ (D) $\frac{1}{3}$

18. If A and B are events such that P $(A \cup B)$ =, $P(A \cap B)$ =, , then is

(A) $\frac{5}{12}$ (B) $\frac{3}{8}$ (C) $\frac{5}{8}$ (D) $\frac{1}{4}$

19. A die is tossed 5 times. Getting an odd number is considered a success. Then the variance of distribution of success is-

(A) $\frac{8}{3}$ (B) $\frac{3}{8}$ (C) $\frac{4}{5}$ (D) $\frac{5}{4}$

20. Five horses are in a race. Mr. A selects two of the horses at random and bets on them. The probability that Mr. A selected the winning horse is-

(A) $\frac{4}{5}$ (B) $\frac{3}{5}$ (C) $\frac{1}{5}$ (D) $\frac{2}{5}$