DPP No: 44

Maximum Time 50 Min

MATHS

TARGET JEE-MAIN

SYLLABUS : PROBABILITY

1. A pair of fair dice is thrown independently three times. The probability of getting a score of exactly 9 twice is

(A) 1/729 (B) 8/9 (C) 8/729 (D) 8/243

2. An ordinary cube has six faces, one face marked 2 another marked 3. Then the probability of obtaining a total of exactly 12 in five throws is

(A) $\frac{5}{1296}$ (B) $\frac{5}{1944}$ (C) $\frac{5}{2592}$ (D) none of these

3. Three of six vertices of a regular hexagon are chosen at random. The probability that the triangle with three vertices is equilateral equal to

(A) $\frac{1}{2}$ (B) $\frac{1}{5}$ (C) $\frac{1}{10}$ (D) $\frac{1}{20}$

4. Three identical dice are rolled. The probability that the same number will appear on each of them is

(A) $\frac{1}{6}$ (B) $\frac{1}{36}$ (C) $\frac{1}{18}$ (D) $\frac{3}{28}$

5. A locker can be opened by dialling a fixed three digit code (between 000 and 999). A stranger who does not know the code, tries to open the locker by dialling three digits at random. The probability that the stranger succeeds in k trials. (Assume that the stranger does not repeat unsuccessful combinations) is

(A) $1-\frac{k}{1000}$ (B) $\frac{k}{1000}$ (C) $\frac{{}^{k}C_3}{{}^{1000}C_3}$ (D) $\frac{3}{1000}$

6. In drawing of a card from a well shuffled ordinary deck of playing cards the events 'card drawn is spade' and 'card drawn is an ace' are

(A) mutually exclusive (B) equally likely

(C) forming an exhaustive system (D) none of these

7. Entries of a 2 × 2 determinant are chosen from the set {–1, 1}. The probability that determinant has zero value is

(A) $\frac{1}{4}$ (B) $\frac{1}{3}$ (C) $\frac{1}{2}$ (D) none of these

8. A and B throw with two dice ; if A throws 9, then B's chance of throwing a higher number equals

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

9. 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

10. A & B having equal skill, are playing a game of best of 5 points. After A has won two points & B has won one point, the probability that A will win the game is:

(A) 1/2 (B) 2/3 (C) 3/4 (D) none

11. A dice is weighted so that the probability of different faces to turn up is as given

Number	1	2	3	4	5	6
Probability	0.2	0.1	0.1	0.3	0.1	0.2

If $P(A/B) = p_1$ and $P(B/C) = p_2$ and $P(C/A) = p_3$ then the values of p_1, p_2, p_3 respectively are-
Take the events A, B & C as A = {1, 2, 3}, B = {2, 3, 5} and C = {2, 4, 6}

(A) $\frac{2}{3}, \frac{1}{3}, \frac{1}{4}$ (B) $\frac{1}{3}, \frac{1}{3}, \frac{1}{6}$ (C) $\frac{1}{4}, \frac{1}{3}, \frac{1}{6}$ (D) $\frac{2}{3}, \frac{1}{6}, \frac{1}{4}$

12. A 9 digit number using the digits 1, 2, 3, 4, 5, 6, 7, 8 & 9 is written randomly without repetition. The probability that the number will be divisible by 9 is:

13. Write the sample space of the following experiment

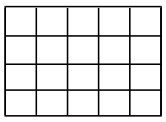
(i) 'Three coins are tossed'.

(ii) 'Selection of two children from a group of 3 boys and 2 girls without replacement'.

14. If the letters of the word BANANA are arranged randomly, then find the probability that the word thus formed does not contain the pattern BAN.

15. Nine cards are labelled 0, 1, 2, 3, 4, 5, 6, 7, 8. Two cards are drawn at random and put on a table in a sucessive order, and then the resulting number is read say 07(seven), 42(fourty two) and so on. Find the probability that the number is even.

16. (i) A rectangle is randomly selected from the grid of equally spaced squares as shown.



Find the probability that the rectangle is a square.

(ii) Three of the six vertices of a regular hexagon are chosen at random. Then the probabil ity that the triangle with three vertices is equilateral is 'p' then 100p equals

17. In throwing a pair of dice, find whether the two events

(i) E1 : 'coming up of an odd number on first dice' and E2 : 'coming up of a total of 8'.

(ii) E1 : 'coming up of 4 on first dice' and E2 : 'coming up of 5 on the second dice'.

are mutually exclusive or not

18. In throwing of a pair of dice, find the probability of the event : total is 'not 8' and 'not 11'.

19. Tickets are numbered from 1 to 100. One ticket is picked up at random. Then find the probabil ity that the ticket picked up has a number which is divisible by 5 or 8.

20. Three cards are drawn at random from a pack of well shuffled 52 cards. Find the probability that
(i) all the three cards are of the same suit;
(ii) one is a king, the other is a queen and the third a jack.

21. Let A and B be two events such that $P(\overline{A \cup B}) = \frac{1}{6}$, $P(A \cap B) = \frac{1}{4}$ and $P(\overline{A}) = \frac{1}{4}$, where $\overline{A}$ stands for complement of event A. Then events A and B are :
(A) mutually exclusive and independent (B) independent but not equally likely
(C) equally likely but not independent (D) equally likely and mutually exclusive

22. A die is thrown. Let A be the event that the number obtained is greater than 3. Let B be the event that the number obtained is less than 5. Then $P(A \cup B)$ is

(A) $\frac{3}{5}$ (B) 0 (C) 1 (D) $\frac{2}{5}$

23. One ticket is selected at random from 50 tickets numbered 00, 01, 02, ..., 49. Then the probability that the sum of the digits on the selected ticket is 8, given that the product of these digits is zero,equal :

(A) $\frac{1}{7}$ (B) $\frac{5}{14}$ (C) $\frac{1}{50}$ (D) $\frac{1}{14}$

24. 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) $\frac{1}{3^n}$

25. There are three clubs A,B,C in a town with 40, 50, 60 members respectively 10 people are members of all the three clubs, 70 members belong to only one club. A member is randomly selected. Find the probability that he has membership of exactly two clubs

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ANSWER KEY OF DPP NO. : 44

1. (D) **2.** (C) **3.** (C) **4.** (B) **5.** (B) **6.** (D) **7.** (C)
8. (A) **9.** (A) **10.** (C) **11.** (D) **12.** (1)
13. **(i)** {HHH, HHT, HTH, THH, HTT, THT, TTH, TTT}
(ii) $\{B_1B_2, B_1B_3, B_1G_1, B_1G_2, B_2B_3, B_2G_1, B_2G_2, B_3G_1, B_3G_2, G_1G_2\}$
14. $\frac{4}{5}$ **15.** $\frac{5}{9}$ **16.** **(i)** $\frac{4}{15}$ **(ii)** 10 **17.** **(i)** No **(ii)** No **18.** $\frac{29}{36}$ **19.** $\frac{3}{10}$
20. **(i)** $\frac{22}{425}$ **(ii)** $\frac{16}{5525}$ **21.** (B) **22.** (C) **23.** (D) **24.** (B) **25.** 5/21