Probability

[MHT-CET 2022]
(online shift)
(Memory Based Questions)

1. A family with three children is chosen at random. The probability that the oldest and youngest children are of the same gender is

   a) $\frac{2}{3}$ b) $\frac{1}{2}$ c) $\frac{1}{8}$ d) $\frac{3}{8}$

2. Five letters are placed at random in five addressed envelops. The probability that all the letters are not dispatched in the respective right envelops is

   a) $\frac{119}{120}$ b) $\frac{1}{120}$ c) $\frac{4}{5}$ d) $\frac{1}{5}$

3. A round table conference is to be held amongst 20 countries. If two particular delegates wish to sit together, then such arrangements can be done in .... ways

   a) $2 \times 18!$ b) $\frac{19!}{2!}$ c) $18!$ d) $19! \times 2!$

4. There are 2 shelves. One shelf has 5 Physics and 3 Biology books and other has 4 Physics and 2 Biology books. Then the probability of drawing a Physics book is

   a) $\frac{9}{38}$ b) $\frac{9}{14}$ c) $\frac{31}{48}$ d) $\frac{1}{2}$

5. A bag contains 5 red balls and 3 green balls. A ball is selected at random and not replaced. A second ball is then selected. The probability of selecting one red ball and one green ball is

   a) $\frac{15}{64}$ b) $\frac{15}{112}$ c) $\frac{15}{56}$ d) $\frac{15}{28}$

6. A, B, C are three events, one of which must happen and only one can happen. The odds in favour of A are 4 : 6, odds against B are 7 : 3, then odds against C are.

   a) 6 : 4   b) 4 : 6   c) 3 : 7   d) 7 : 3

7. 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 tickets is 8, given that the product of these digits is zero is

   a) $\frac{14}{50}$ b) $\frac{1}{50}$ c) $\frac{1}{14}$ d) $\frac{1}{10}$

8. Three critics review a book. For the three critics, the odds in favour of the book are (5 : 2), (4 : 3) and (3 : 4) respectively. Then probability that the majority is in favour of the book is

   a) $\frac{209}{343}$ b) $\frac{149}{343}$ c) $\frac{185}{343}$ d) $\frac{129}{343}$

9.

10.

11

1

9. Let ω be a complex cube root of unity with $\omega \neq 1$. A fair die is thrown three times. If r_1, r_2 and r_3 are the numbers obtained on the die, then the probability that $\omega^{r_1} + \omega^{r_2} + \omega^{r_3} = 0$ is

a) $\dfrac{1}{8}$ b) $\dfrac{2}{9}$ c) $\dfrac{1}{9}$ d) $\dfrac{1}{36}$

10. If $P(A \cup B) = 0.7$, $P(A \cap B) = 0.2$. Then $P(A') + P(B')$ is

a) 1.1 b) 0.6 c) 1.8 d) 1.6

[MHT-CET 2021]
(online shift)

11. Two dice are rolled simultaneously. The probability that the sum of the two numbers on the dice is a prime number is :

a) $\dfrac{5}{11}$ b) $\dfrac{5}{12}$ c) $\dfrac{7}{12}$ d) $\dfrac{7}{11}$

12. Two unbiased dice are thrown. Then the probability that neither a doublet nor a total of 10 will appear is

a) $\dfrac{1}{12}$ b) $\dfrac{1}{36}$ c) $\dfrac{2}{9}$ d) $\dfrac{7}{9}$

13. A coin is tossed and a die is thrown. The probability that the outcome will be head or a number greater than 4 or both is

a) $\dfrac{2}{3}$ b) $\dfrac{1}{6}$ c) $\dfrac{1}{2}$ d) $\dfrac{1}{3}$

14. For two events A and B, $P(A \cup B) = \dfrac{5}{6}$, $P(A) = \dfrac{1}{6}$, $P(B) = \dfrac{2}{3}$. Then A and B are

a) independent
b) mutually exhaustive
c) mutually exclusive
d) complementary

15. First bag contains 3 red and 5 black balls and second bag contains 6 red and 4 black balls. A ball is drawn from each bag. The probability that one ball is red and the other is black is

a) $\dfrac{41}{80}$ b) $\dfrac{21}{40}$ c) $\dfrac{3}{20}$ d) $\dfrac{3}{8}$

16. A fair coin is tossed 4 times. If x is a random variable which indicates number of heads, then $P[x < 3] = \ldots$

a) $\dfrac{10}{16}$ b) $\dfrac{1}{16}$ c) $\dfrac{12}{16}$ d) $\dfrac{11}{16}$

17. Rooms in a hotel are numbered from 1 to 19. Rooms are allocated at random as guests arrive. The first guest to arrive is given a room which is a prime number. The probability that the second guest to arrive is given a room which is a prime number is

a) $\dfrac{8}{19} \times \dfrac{7}{18}$ b) $\dfrac{8}{19}$ c) $\dfrac{8}{19} \times \dfrac{7}{19}$ d) $\dfrac{7}{18}$

18. A man is known to speak truth 3 out of 4 times. He throws a die and reports that it is 6. Then the probability that it is actually 6 is

a) $\dfrac{3}{4}$ b) $\dfrac{1}{4}$ c) $\dfrac{3}{8}$ d) $\dfrac{5}{6}$

28. If a fair coin is tossed 8 times, then the probability that it shows heads more than tails is

a) $\dfrac{91}{256}$ b) $\dfrac{97}{256}$ c) $\dfrac{95}{256}$ d) $\dfrac{93}{256}$

29. The letters of the word 'LOGARITHM' are arranged at random. The probability that arrangements start with vowels and end with consonants is

a) $\dfrac{18}{9!}$ b) $\dfrac{7!}{9!}$ c) $\dfrac{1}{4}$ d) $\dfrac{1}{9}$

30. Suppose that 5 % of men and 0.25 % of women have gray hair. A gray haired person is selected random. If there are equal number of males and females, then the probability that the person selected being a man is

a) $\dfrac{11}{21}$ b) $\dfrac{1}{21}$ c) $\dfrac{20}{21}$ d) $\dfrac{10}{21}$

[MHT-CET 2019]

31. A bag contains 6 white and 4 black balls. Two balls are drawn at random. The probability that they are of the same colour is

a) $\dfrac{1}{7}$ b) $\dfrac{7}{15}$ c) $\dfrac{1}{15}$ d) $\dfrac{5}{7}$

32. The probability that three cards drawn from a pack of 52 cards, are all red is

a) $\dfrac{1}{17}$ b) $\dfrac{2}{17}$ c) $\dfrac{3}{17}$ d) $\dfrac{4}{17}$

33. If $P(A) = \dfrac{1}{4}$, $P(B) = \dfrac{2}{5}$ and $P(A \cap B) = \dfrac{3}{20}$, then $P(A^1 \cap B^1) =$

a) $\dfrac{17}{20}$ b) $\dfrac{13}{20}$ c) $\dfrac{1}{2}$ d) $\dfrac{1}{3}$

34. Five persons are chosen at random from a group containing 4 men, 2 women and 4 children. The chance that exactly two of them will be children is

a) $\dfrac{10}{21}$ b) $\dfrac{1}{10}$ c) $\dfrac{1}{21}$ d) $\dfrac{8}{21}$

35. If A and B are two events defined in a sample space S such that

$P(A \cap B) = \dfrac{1}{4}$, $P(A \cup B) = \dfrac{5}{8}$, $P(B^1) = \dfrac{2}{3}$ then $P(A) = ..$

a) $\dfrac{13}{24}$ b) $\dfrac{9}{24}$ c) $\dfrac{17}{24}$ d) $\dfrac{15}{24}$

[MHT-CET 2018]

36. Letters in the word HULULULU are rearranged. The probability of all three L being together is

a) $\dfrac{3}{20}$ b) $\dfrac{2}{5}$ c) $\dfrac{3}{28}$ d) $\dfrac{5}{23}$

[MHT-CET 2023]

37. Let N denote the sum of the numbers obtained when two dice are rolled. If the probability that $2^N < N!$ is $\dfrac{m}{n}$, where m and n are coprime, then $4m - 3n =$

a) 6   b) 8   c) 10   d) 12

48. Three critics review a book. For three critics, the odd in favour of the book are 2 : 5, 3 : 4 and 4 : 3 respectively. The probability that the majority is in favour of the book is

   a) $\dfrac{134}{343}$ b) $\dfrac{149}{343}$ c) $\dfrac{185}{343}$ d) $\dfrac{209}{343}$

49. A, B, C are three events, one of which must and only one can happen. The odds in favour of A are 4 : 6 and odds against B are 7 : 3. The odds against C are

   a) 3 : 7   b) 7 : 3   c) 4 : 6   d) 6 : 4

[MHT-CET 2024]

50. The letters of the word 'EQUATION' are arranged in a row. The probability that all the vowels are together is

   a) $\dfrac{3}{14}$ b) $\dfrac{1}{14}$ c) $\dfrac{1}{56}$ d) $\dfrac{15}{56}$

51. Three houses are available in a locality. Three persons apply for the houses. Each apply for one house without consulting others. The probability that all three persons apply for the same house is

   a) $\dfrac{1}{9}$ b) $\dfrac{2}{9}$ c) $\dfrac{7}{9}$ d) $\dfrac{8}{9}$

52. If two dice are rolled, then the probability that the sum of the numbers on the upper faces is atleast 9, is

   a) $\dfrac{5}{36}$ b) $\dfrac{5}{18}$ c) $\dfrac{4}{11}$ d) $\dfrac{1}{3}$

53. Three cards are drawn from a pack of 52 cards. The chance that atleast one is diamond card is

   a) $\dfrac{997}{1700}$ b) $\dfrac{999}{1700}$ c) $\dfrac{995}{1700}$ d) $\dfrac{991}{1700}$

54. If A and B are two events such that the probability that exactly one of them occurs is $\dfrac{2}{5}$ and the probability that A or B occurs is $\dfrac{1}{2}$, then the probability that both of them occur together is

   a) 0.01   b) 0.02   c) 0.1   d) 0.2

55. An urn contains 9 balls of which 3 are red, 4 are blue and 2 are green. Three balls are drawn at random from the urn. The probability that the three balls have different colours is

   a) $\dfrac{2}{7}$ b) $\dfrac{1}{7}$ c) $\dfrac{3}{14}$ d) $\dfrac{1}{14}$

56. If A and B are two independent events such that $P(A') = 0.75$, $P(A \cup B) = 0.65$ and $P(B) = k$, then $k =$

   a) $\dfrac{5}{14}$ b) $\dfrac{9}{14}$ c) $\dfrac{7}{15}$ d) $\dfrac{8}{15}$

57. If A and B are two independent events such that $P(A) = \dfrac{3}{10}$ and $P(B) = \dfrac{2}{5}$, then $P(A' \cup B) =$

   a) $\dfrac{7}{25}$ b) $\dfrac{7}{50}$ c) $\dfrac{41}{50}$ d) $\dfrac{41}{125}$