CTQ - 2023

CTQ : Concept Through Questions
Topic : Probability III

Year : 2023

1. If E1 and E2 are two events associated with a random experiment such that P(E2) = 0.35, P(E1 or E2) = 0.85 and P(E1 & E2) = 0.15 then P(E1) is
    (a) 0.25
    (b) 0.35
    (c) 0.65
    (d) 0.75
    Video Solution
    [NIMCET 2017]

2. The mean and variance of a random variable X having binomial distribution are 4 and 2 respectively. The P(X = 1) is
    (a) 1/32
    (b) 1/16
    (c) 1/8
    (d) ¼
    Video Solution
    [NIMCET 2017]

3. Let A and B be two events such that $P\left(\overline{(A \cup B)}\right) = \frac{1}{6}$, P(A∩B)=1/4 and $P(\bar{A}) = 1/4$, where $\bar{A}$ stands for complement of event A. Then the events A and B are
    (a) Independent but not equally likely
    (b) Mutually exclusively and independent
    (c) Equally likely and mutually exclusive
    (d) Equally likely but not independent
    Video Solution
    [NIMCET 2017, 2009]

4. A man is known to speak the truth 2 out of 3 times. He threw a dice cube with 1 to 6 on its faces and reports that it is 1. Then the probability that it is actually 1 is
    (a) 1/2
    (b) 1/7
    (c) 2/7
    (d) 5/6
    Video Solution
    [NIMCET 2017]

5. In an entrance test there are multiple choice questions, with four possible answer to each question of which one is correct. The probability that a student knows the answer to a question is 90%. If the student gets the correct answer to a question, then the probability that he was guessing is
    (a) 37/40
    (b) 1/37
    (c) 36/37
    (d) 1/9
    Video Solution
    [NIMCET 2017]

6. A and B are independent witness in a case. The chance that A speaks truth is x and B speaks truth is y. If A and B agree on certain statement, the probability that the statement is true is
    (a) $\frac{xy}{xy+(1-x)(1-y)}$
    (b) $\frac{xy}{1-x-y+2xy}$
    (c) $\frac{(1-x)(1-y)}{xy+(1-x)(1-y)}$
    (d) $\frac{x+y}{xy+(1-x)(1-y)}$
    Video Solution
    [NIMCET 2017,2009]

7. If A and B are two events and P(A∪B)=5/6, P(A∩B)=1/2 , P(A)=2/3 then A and B are two events which are
   (a) Dependent   (b) Independent
   (c) Mutually exclusive   (d) Equally likely   Video Solution
                                                          [NIMCET 2018]

8. A and B play a game where each is asked to select a number from 1 to 25. If the two numbers match, both of them win a prize. The probability that they will not win a prize in a single trial is
   (a) 1/25   (b) 24/25
   (c) 2/25   (d) None of these   Video Solution
                                                          [NIMCET 2018]

9. Three numbers a,b and c are chosen at random (without replacement) from among the numbers 1, 2, 3, … , 99. The probability that $a^3 + b^3 + c^3 - 3abc$ is divisible by 3 is

   (a) $\frac{3\,^{33}C_3 + \left(^{33}C_1\right)^3}{^{99}C_3}$

   (b) $\frac{3\,^{33}C_3 - \left(^{33}C_1\right)^3}{^{99}C_3}$

   (c) $\frac{2\,^{33}C_3 + \left(^{33}C_1\right)^3}{^{99}C_3}$

   (d) $\frac{2\,^{33}C_3 - \left(^{33}C_1\right)^3}{^{99}C_3}$ Video Solution

                                                          [NIMCET 2018]

10. Two persons A and B agree to meet on 20th April 2018 between 6 P.M. and 7 P.M. with understanding that they will wait no longer than 20 minutes for the other. What is the probability that they meet?
    (a) 5/9   (b) 7/9
    (c) 2/9   (d) 4/9   Video Solution
                                                          [NIMCET 2018]

11. A computer producing factory has only two plants T_1 and T_2. Plant T_1 produces 20% and plant T_2 produces 80% of the total computers produced. 7% of the computers produced in the factory turn out to be defective. It is known that P (computer turns out to be defective given that it is produced in plant T_1) = 10P (computer turns out to be defective given that it is produced in plant T_2). Where P(E) denotes the probability of an event E. A computer produced in the factory is randomly selected and it does not turn out to be defective. Then the probability that it is produced in plant T_2 is
    (a) 36/73   (b) 47/79
    (c) 78/93   (d) 75/83   Video Solution
                                                          [NIMCET 2019]

12. In a chess tournament, n men and 2 women players participated. Each player plays 2 games against every other player. Also, the total number of games played by the men among themselves exceeded by 66 the number of games that the men played against the women. Then the total number of players in the tournament is
    (a) 13   (b) 11
    (c) 9   (d) 7   Video Solution
                                                          [NIMCET 2019]

13. If a man purchases a raffle ticket, he can win a first prize of Rs. 5, 000 or a second prize of Rs. 2,000 with probabilities 0.001 and 0.003 respectively. What should be a fair price to pay for the ticket?
    (a) Rs.11   (b) Rs.15
    (c) Rs.2,000   (d) None of these   Video Solution

14. Let U and V be two events of a sample space S and P(A) denote the probability of an event A. Which of the following statements is true?
    (a) If P(U)=P(V) the U=V
    (b) If P(U)=0 then U^c= S
    (c) If U ∩ V = φ then U and V are independent.
    (d) If U and V are independent, then so are U^c and V^c Video Solution

15. A man takes a step forward with probability 0.4 and backward with probability 0.6. The probability that at the end of eleven steps, he is one step away from the starting point is
    (a) $462(0.34)^5$ (b) $462(0.04)^5$
    (c) $462(0.14)^5$ (d) $462(0.24)^5$ Video Solution

16. Two numbers a and b are chosen are random from a set of first 30 natural numbers, then the probability that $a^2 - b^2$ is divisible by 3 is
    (a) 47/87   (b) 15/87
    (c) 12/87   (d) 9/87   Video Solution

17. A and B play a game where each is asked to select a number from 1 to 25. If the two numbers match, both win a prize. The probability that they will not win a prize in a single trial is
    (a) 1/25   (b) 24/25
    (c) 2/25   (d) 3/25   Video Solution

18. A problem in Mathematics is given to 3 students A, B and C. If the probability of A solving the problem is 1/2 and B not solving it is 1/4 . The whole probability of the problem being solved is 63/64 , then what is the probability of solving it by C?
    (a) 1/8   (b) 1/64
    (c) 7/8   (d) 1/2   Video Solution

19. If three thrown of three dice, the probability of throwing triplets not more than twice is
    (a) $1 - 1/6^2$ (b) $1 - 1/6^3$
    (c) $1 - 1/36^2$ (d) $1 - 1/36^3$ Video Solution

20. If a number x is selected from natural numbers 1,2,...,100, then the probability for $x + \frac{100}{x} > 29$ is
    (a) 37/50   (b) 39/50
    (c) 41/50   (d) 43/50   Video Solution

21. The probability that a man who is x years old will die in a year is p. Then, amongst n persons $A_1, A_2, ... A_n$ each x year old now, the probability that A_1 will die in one year is
    (a) $1/n^2$ (b) $1 - (1 - p)^n$
    (c) $\frac{1}{n^2}[1 - (1 - p)^n]$ (d) $\frac{1}{n}[1 - (1 - p)^n]$ Video Solution

[NIMCET 2021]

22. The probability of occurrence of two events E and F are 0.25 and 0.50, respectively. the probability of their simultaneous occurrence is 0.14. the probability that neither E nor F occur is
    (a) 0.61
    (b) 0.11
    (c) 0.39
    (d) 0.89   Video Solution

[NIMCET 2021]

23. A four-digit number is formed using the digits 1, 2, 3, 4, 5 without repetition. The probability that is divisible by 3 is
    (a) 1/3
    (b) 1/4
    (c) 1/5
    (d) 1/6   Video Solution

[NIMCET 2022]

24. If 0<P(A)<1 and 0<P(B)<1 and P(A∩B)=P(A)P(B), then
    (a) P(B│A)=P(B)-P(A)
    (b) $P(A^c - B^c) = P(A^c) - P(B^c)$
    (c) $P(A \cup B)^c = P(A^c)P(B^c)$
    (d) P(A│B)=P(A)-P(B)   Video Solution

[NIMCET 2022]

25. The first three moments of a distribution about 2 are 1, 16, -40 respectively. The mean and variance of the distribution are
    (a) (2,16)
    (b) (2,15)
    (c) (3,15)
    (d) (1,16)   Video Solution

[NIMCET 2022]

Answer Key

Ques.	1	2	3	4	5	6	7	8	9	10
Ans.	C	A	A	C	B	A	D	B	A	A
Ques.	11	12	13	14	15	16	17	18	19	20
Ans.	C	A	A	B	D	A		C	D	B
Ques.	21	22	23	24	25					
Ans.	B	C	C	C	C					