

Introduction to Statistical Methods

(S1-22 AIMLCZC418) – Assignment 1

Each question carries 2 Marks (2 x 5 = 10 Marks)

Duration: 10th December2022 - 31st December2022

1) Submissions are individual

2) Solve these on paper, scan, and upload

3) Plagiarism results in zero marks

4) Write your name, BITS ID and Section on each page

1. In a consumer survey of Tea Powder, 15% people try Brand A, 20% try Brand B, 30% try Brand C and 35% try Brand D. After the trial period 99% are satisfied with Brand A, 98% are satisfied with Brand B, 98% are satisfied with Brand C, 97% are satisfied with Brand D. If a person that tried one of these brands is chosen at random and is not satisfied, what is the probability that the chosen person tried Brand D?

2. Suppose bag I contains 3 apples and 4 mangoes while Bag II contains 4 apples and 3 oranges. A die is tossed. If the face of die land up 1 or 3, a fruit is drawn from the bag I. But if die land up with any other number, a fruit is drawn from bag II then find the probability of getting apple.

3. If a random variable has a probability density

$$f(x) = \begin{cases} 0 & \text{for } x \leq 0 \\ kxe^{-4x} & \text{for } x > 0 \end{cases}$$

Then find k and the probabilities that it will take on a value

a) Between 2 and 4 b) Greater than $\frac{1}{4}$

4. The probability of Rahul and Sanjay speaks the truth is 0.75 and 0.70. A marble is drawn at random from the basket containing one blue and five different color marbles. Both Rahul and Sanjay reported that selected marble from the basket is blue. What is the probability that they reported correctly?

5. Consider the car theft problem with attributes Color, Type, Origin, and the target, stolen can be either Yes or No.

Color	Type	Origin	Stolen?
Red	Sports	Domestic	Yes
Red	Sports	Domestic	No
Red	Sports	Domestic	Yes
Yellow	Sports	Domestic	No
Yellow	Sports	Imported	Yes
Yellow	SUV	Imported	No
Yellow	SUV	Imported	Yes
Yellow	SUV	Domestic	No
Red	SUV	Imported	No
Red	Sports	Imported	Yes

we need to classify whether the car is stolen, given the features of the car.

Given the Yellow color Sports Domestic car Find the probability of whether the car is stolen?