ISM Assignment-1

M Tech Artificial Intelligence and Machine Learning (Birla Institute of Technology and Science, Pilani)

Introduction to Statistical Methods

(S2-24_AIMLCZC418) – Assignment 1

AIML Section- 3

1. In a garden, there are 39 plants. The heights (in cm) of 5 randomly selected plants are 38, 51, 46, 79, and 57. Calculate the standard deviation of their heights.

2. In a bolt factory, three machines M_1, M_2, and M_3 manufacture 2000, 2500, and 4000 bolts every day. Of their output 3%, 4%, and 2.5% are defective bolts. One of the bolts is drawn at randomly from a day's production and is found to be defective. What is the probability that it was produced by machine M_2?

3. The events A and B are independent with P(A) = 0.5 and P(B)=0.8. Find the probability that neither of the events occurs.

4. Company has three plants which manufacture scooters. Plant A manufactures 50% of the scooters, Plant B manufactures 30% of the scooters, and Plant C manufactures 20% of the scooters. At Plant A, 90 out of 100 scooters are rated as being of standard quality. At Plant B, 80 out of 100 scooters are of standard quality, while at Plant C, 70 out of 100 scooters are rated as being of standard quality.
   (a) What is the probability that a randomly selected scooter is of standard quality?
   (b) Find the probability that a randomly selected scooter is of non-standard quality.

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