

Running time 018



COMSATS University Islamabad
Department of Computer Sciences
Midterm Examination Spring 2024
Subject: Statistics and Probability Theory

Class : BS(AI) - III
Marks: 25

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Time Allowed: 80 Minutes
Instructor : Lubna Waqar

Note: Attempt all questions.

Question No. 01: According to the journal Chemical Engineering, an important property of a fiber is its water absorbency. A random sample of 20 pieces of cotton fiber was taken and the absorbency on each piece was measured. The following are the absorbency values:

18.71 21.41 20.72 21.81 19.29 22.43 20.17 23.71 19.44 20.50 18.92 20.53 23.00 22.85
19.75 21.77 22.11 19.77 18.04 21.42

5 interval

18-19
19-20
20-21
21-22
22-23

- Group the data into 5 intervals by using appropriate class interval size.
- Calculate the quartile deviation for the above data.
- Check the symmetry of data by using mean median and mode.

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Question No. 02: Example 32 (Pg 104)

Three cards are drawn in succession, without replacement, from an ordinary deck of playing cards. Find the probability that the event $A_1 \cap A_2 \cap A_3$ occurs, where A_1 is the event that the first card is a red ace, A_2 is the event that the second card is a 10 or a jack, and A_3 is the event that the third card is greater than 3 but less than 7.

$A_1 \cap A_2 \cap A_3$

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Question No. 03: Q168 Q20 (Pg 88, 89)

- Find the number of ways that 6 teachers can be assigned to 4 sections of an introductory psychology course if no teacher is assigned to more than one section.
- In how many ways can 3 oaks, 4 pines, and 2 maples be arranged along a property line if one does not distinguish among trees of the same kind?

Question No. 04: An automobile manufacturer is concerned about a possible recall of its best-selling four-door sedan. If there were a recall there is a probability of 0.25 of a defect in the brake system, 0.18 of a defect in the transmission, 0.17 of a defect in the fuel system, and 0.40 of a defect in some other area.

- What is the probability that the defect is the brakes or the fueling system if the probability of defects in both systems simultaneously is 0.15?
- What is the probability that there are no defects in either the brakes or the fueling system?

$P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$3 \times 4 \times 2$

1.2

1.2

$K = 1 \times 3 \times 3$

17.9
18-19.2
19.3-20.5