

JK LAKSHMIPAT UNIVERSITY, JAIPUR
INSTITUTE OF ENGINEERING AND TECHNOLOGY
 End Term Examination (Regular), December 2021
 BCA, Semester III

Roll No.....

AS1106: STATISTICAL COMPUTING

Time: 3 hours

Max. Marks: 50

Instructions to students:

1. Do not write anything other than your roll number on the question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow charts wherever required is an integral part of the answer.
4. Use of calculator is allowed.

- Q.1A Use the following frequency distribution of heights to find the mean height of 100 male students. Also, find the mode and median of the data 06

Height (in)	60-62	63-65	66-68	69-71	72-74
Frequency (f)	5	18	42	27	8

- Q.1B Find the 5-number summary for the following list of $n=18$ data values: 05
 2, 7, 4, 1, 6, 4, 8, 15, 12, 7, 3, 16, 1, 2, 11, 5, 15

- Q.1C Can 4th and 8th deciles be written as percentiles? Give reasons for your answer. 02

- Q.2A Three bulbs are selected at random from the collection. A bulb can be defective (D) or can be non-defective (N). Write the sample space for this experiment. 01

- Q.2B Suppose A and B are events with $P(A) = 0.7$, $P(B) = 0.5$ and $P(A \cap B) = 0.4$. Find the probability of: 04
 (a) A^c . (b) B^c . (c) $A \cup B$. (d) $(A \cup B)^c$.

- Q.2C Three bolts and three nuts are in a box. Two parts are chosen at random. Find the probability that one is a bolt and one is a nut. 02

- Q.3A A fair die is tossed. Consider events $A = \{1, 3, 5\}$, $B = \{2, 3, 5\}$, $C = \{1, 2, 3, 4\}$. Find: 05
 (a) $P(A|B)$ and $P(A|C)$
 (b) $P(A|B^c)$ and $P(C|A^c)$

- Q.3B A paint-store chain produces and sells latex and semigloss paint. Based on long-range sales, the probability that a customer will purchase latex paint is 0.75. Of those that purchase latex paint, 60% also purchase rollers. But only 30% of semigloss paint buyers purchase rollers. A randomly selected buyer purchases a roller and a can of paint. What is the probability that the paint is latex 02

- Q.4A A pair of dice is thrown. Let X denote the minimum of the two numbers which occur. Make the probability distribution table for X and then find the expectation and variance of X . 05

- Q.4B The proportion of people who respond to a certain mail-order solicitation is a continuous random variable X that has the density function 03

$$f(x) = \begin{cases} \frac{2x}{5} + \frac{2}{5}, & 0 < x < 1 \\ 0, & \text{elsewhere} \end{cases}$$

Show that $P(0 < X < 1) = 1$.

- Q.4C The probability that a man hits a target is $p = \frac{1}{10} = 0.1$. He fires $n = 100$ times. Find the expected number E of times he will hit the target and the standard deviation. 04

- Q.6A For the following bivariate data: 10

x	5	10	5	11	12	4	3	2	7	1
y	1	6	2	8	5	1	4	6	5	2

- Compute the correlation coefficient r and coefficient of determination.
 - For the x and y values, find the means $\bar{x}$ and $\bar{y}$, and sample standard deviation s_x and s_y .
 - Calculate sample covariance s_{xy} .
- Q.6B If coefficient of determination is 1, then what can be said about observation points and regression line. 01