

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS-2022

B.Tech-III Semester (BT)

COURSE CODE (CREDITS): 18B11MA321 (4)

MAX. MARKS: 25

COURSE NAME: PROBABILITY AND STATISTICAL TECHNIQUES

COURSE INSTRUCTOR: Dr. B. K. Pathak

MAX. TIME: 1 Hour and 30 Minutes

*Note: All questions are compulsory. Marks are indicated against each question in square brackets.*

Q 1. (a) Construct the stem and leaf plot from the following data: [CO-1] [3]

25, 26, 31, 33, 33, 36, 36, 40, 42, 51

(b) The stem-and-leaf representation of the scores on a test administered to a group of students. What was the mode of the scores?

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3 | 4
4 | 3 4 7 7
5 | 2 2 4 4 7 7 8
6 | 0 2 2 3 4 4 4 7 9 9
7 | 2 3 3 4 5 5 6 6 6 6 7 7 8 8
8 | 0 1 1 4 6 7 7 7 9
9 | 1 2 2 4 5 8
```

Q 2. Prove that sum of deviations of the given values from their arithmetic mean is zero.

$X$ (Price)	4	10.5	15	16.3	12
$f$ (Quantity)	70	30	40	20	50

[CO-1] [3]

Q 3. Find the probability of drawing a card which is either a king or queen from a well shuffled pack of playing card. [CO-2] [3]

Q 4. Explain the following terms with example : [CO-1] [4]

(i) Attribute

(ii) Variable

(iii) Statistic

(iv) Parameter

Q 5. A random variable  $X$  has the following probability distribution: [CO-2] [4]

$X$	0	1	2	3	4	5	6	7
$P(X)$	$a$	$4a$	$3a$	$7a$	$8a$	$10a$	$6a$	$9a$

- (i) Determine the value of ' $a$ '.
- (ii) Find  $P(X < 3)$ ,  $P(0 < X < 5)$ .
- (iii) Give the smallest value of  $m$  for which  $P(X \leq m) \leq 0.6$ .

Q 6. The number of telephone calls arriving on a switch board of an office is 90 per hour. Find the probability that at the most 3 calls in a minute on the board arrive. [CO-2] [4]

Q 7. A random sample of 900 members has a mean 3.4. Can it be reasonably regarded as a sample from a large population of mean 3.25 and standard deviation 2.61.

Give  $Z_{(5\%)} = 1.96$  [CO-3] [4]

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