



Date: 24-04-2025

Dept. No.

Max. : 100 Marks

Time: 09:00 AM - 12:00 PM

SECTION A - K1 (CO1)

	Answer ALL the Questions	(10 x 1 = 10)
1.	Multiple Choice Questions:	
a)	Which of the following are not averages? i) Median ii) Mode iii) Weighted Arithmetic Mean iv) Average Deviation	
b)	Which of the following is the formula for range? i) $Q3 - Q1$ ii) $Q2 - Q3$ iii) $L - S$ iv) $S - L$	
c)	Which of the following measures the average relationship between two or more variables in terms of the original units of the data? i) Correlation ii) Regression iii) Variance iv) Range	
d)	When a fair coin is tossed once, the probability of getting either head or tail is best described by which of the following events? i) Mutually exclusive events ii) Non-mutually exclusive events iii) Dependent events iv) None	
e)	Which of the following is the variance of binomial distribution? i) np ii) npq iii) nq iv) square root of npq	
2.	State True or False	
a)	Median refers to the middle value in a distribution.	
b)	Coefficient of variation is also called coefficient of variability.	
c)	The coefficient of correlation lies between 0 and 1.	
d)	Classical probability is also called 'apriori' probability.	
e)	The binomial and the poisson distributions are theoretical distributions for continuous variables.	

SECTION A - K2 (CO1)

	Answer ALL the Questions	(10 x 1 = 10)
3.	Fill in the blanks	
a)	_____ is an attempt to find one single value to describe whole set of values.	
b)	A mean deviation can be computed either from median or _____	
c)	If, $b_{xy} = 0.85$; $b_{yx} = 0.89$, then the value of 'r' is _____	
d)	$P(A \cup B) = P(A) + P(B) - P(AB)$ is the probability model of _____	
e)	In case of _____ distribution the mean and variance are equal.	
4.	Match the following	
a)	Statistics	i) Positional measure of deviation
b)	Quartile Deviation	ii) Unbiased coin
c)	$r = (-)1$	iii) Bell shape
d)	Random experiment	iv) Perfectly negative correlation
e)	Normal Curve	v) Aggregate of facts

SECTION B - K3 (CO2)**Answer any TWO of the following in 100 words each.****(2 x 10 = 20)**

5. Explain the various methods of classification of data using suitable examples
6. Compute inter-quartile range and coefficient of quartile deviation from the following data
- | | | | | | | | |
|------------------|---|----|----|----|----|----|----|
| Marks: | 5 | 10 | 15 | 20 | 25 | 30 | 35 |
| No. Of students: | 6 | 4 | 10 | 15 | 10 | 20 | 15 |
7. Differentiate correlation from regression analyses and state the condition where the correlation coefficient equates the regression coefficient.
8. Explain the multiplication theorem on probability.

SECTION C – K4 (CO3)**Answer any TWO of the following in 100 words each.****(2 x 10 = 20)**

9. State the properties of Poisson distribution and list out its important applications in the real world.
10. Two experts were asked to rank 7 different types of perfumes. The ranks given by them are as follows:
- | | | | | | | | |
|-----------|---|---|---|---|---|---|---|
| Perfumes: | A | B | C | D | E | F | G |
| Expert-1: | 2 | 1 | 4 | 3 | 5 | 7 | 6 |
| Expert-2: | 1 | 3 | 2 | 4 | 5 | 6 | 7 |
- Calculate Spearman's rank correlation coefficient.
11. In a single throw of two dice, what is the probability of getting :-
a) a sum of at least 8.
b) a sum of at least 10
12. Compute standard deviation and coefficient of variation for the following data assuming the mean as 32.
- | | | | | | |
|------------|-------|-------|-------|-------|-------|
| Class: | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 |
| Frequency: | 1 | 22 | 64 | 10 | 3 |

SECTION D – K5 (CO4)**Answer any ONE of the following in 250 words****(1 x 20 = 20)**

13. Examine the various methods of computing correlation coefficient.
14. From the following observation determine the mean, median and mode.
- | | | | | | | | | | |
|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| X: | 10-19 | 20-29 | 30-39 | 40-49 | 50-59 | 60-69 | 70-79 | 80-89 | 90-99 |
| Y: | 11 | 19 | 21 | 16 | 10 | 8 | 6 | 3 | 1 |

SECTION E – K6 (CO5)**Answer any ONE of the following in 250 words****(1 x 20 = 20)**

15. From the data given below find: (a) Two regression equations; (b) Correlation coefficient between marks in Economics and Statistics; (c) The most likely marks in Statistics when the marks in Economics is 32.
- | | | | | | |
|----------------------|----|----|----|----|----|
| Marks in Economics: | 50 | 20 | 80 | 25 | 30 |
| Marks in Statistics: | 60 | 30 | 90 | 25 | 25 |
16. The screws produced by a certain machine were checked by examining samples of 12. The following table shows the distribution of 128 samples according to the number of defective items they contained:
- | | | | | | | | | | |
|--------------------------------------|---|---|----|----|----|----|---|---|-------|
| No. of defectives in a sample of 12: | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Total |
| No. of sample | 7 | 6 | 19 | 35 | 30 | 23 | 7 | 1 | 128 |
- Fit a binomial distribution and find the expected frequencies, if the chance of machine being defective is $\frac{1}{2}$. Find the mean and variance of the fitted distribution.