



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

U.G. DEGREE EXAMINATION – ALLIED

SECOND SEMESTER – APRIL 2024

UCO 2302 – STATISTICS FOR DECISION MAKING

Date: 06-04-2024

Dept. No.

Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

SECTION A - K1 (CO1)

Answer ALL the Questions

(10 x 1 = 10)

1. Answer the following

- a) Arithmetic mean
- b) Correlation
- c) Regression
- d) Time Series
- e) Linear Programming Problem

2. Multiple Choice Questions

- a) The Mode for the following data is _____.
1 5 7 9 11 4 2 8 7
(i) 7 (ii) 3 (iii) 2 (iv) 11
- b) The coefficient of correlation:
(i) has no limits (ii) can be less than 1 (iii) can be more than 1
(iv) varies between +1 & -1
- c) In Regression analysis byx stands for _____.
(i) Regression equation of X on Y
(ii) Regression equation of Y on X
(iii) Regression coefficient of Y on X
(iv) None of these
- d) Laspeyres index is based on _____.
(i) Base year quantities (ii) Current year quantities
(iii) Both of them (iv) None of these
- e) In the Northwest corner method the allocations are made:
(i) Starting from the left-hand side top corner
(ii) Starting from the right-hand side top corner
(iii) Starting from the lowest cost cell
(iv) Starting from the lowest requirement and satisfying first

SECTION A - K2 (CO1)

Answer ALL the Questions

(10 x 1 = 10)

3. True or False

- a) The Range for the following data is 29.
75, 29, 96, 15, 7, 8, 11, 4, 9.
- b) The coefficient of correlation is 0.98 when $b_{xy} = 1.2$ and $b_{yx} = 0.8$
- c) If “r” is negative both the variables are decreasing.
- d) Secular trend refers to the long-term movement.
- e) A basic requirement for using the transportation technique is that of total demand equals total capacity.

4. Match the following

- a) Median - (i) Floods, earthquakes, strikes and war
b) Curve Fitting - (ii) VAM
c) Regression Analysis - (iii) Method of least squares
d) Irregular Variations - (iv) Indicates the cause-and-effect relation
e) Transportation Problem - (v) Middle value in a distribution

SECTION B - K3 (CO2)**Answer any TWO of the following****(2 x 10 = 20)**

5. Find the coefficient of skewness from the following data:

Value	Frequency
6	4
12	7
18	9
24	18
30	15
36	10
42	5

6. Two judges in a beauty competition rank the 12 entries as follows:

X	1	2	3	4	5	6	7	8	9	10	11	12
Y	12	9	6	10	3	5	4	7	8	2	11	1

Calculate Spearman's coefficient of rank correlation.

7. Given the bivariate table:

X	1	5	3	2	1	1	7	3
Y	6	1	0	0	1	2	1	5

Fit a regression line of X on Y and then predict X if Y = 2.5

8. Compute five yearly moving averages from the following data:

Year	No. of Students
2008	705
2009	685
2010	703
2011	687
2012	705
2013	689
2014	715
2015	685
2016	725
2017	730

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

9. The following figures give the income of 10 persons in rupees. Find the standard deviation.
227, 235, 255, 269, 292, 299, 312, 321, 333, 348.

10. Fit a straight-line trend by the method of least squares to the following data. Assuming that the same rate of change continues. What would be the predicted earnings for the year 2024?

Year	Earnings (₹. Lakhs)
2013	38
2014	40
2015	65
2016	72
2017	69
2018	60
2019	87
2020	95

11. Construct price index number of the following data by using:
 (i) Laspeyre's Method,
 (ii) Paasche's Method, and
 (iii) Fisher's Ideal Index Method.

Items	Base Year		Current Year	
	Quantity	Price	Quantity	Price
A	3	5	2	8
B	7	4	5	6
C	4	7	3	10
D	6	6	5	7

12. Solve the following transportation problem using Vogel's Approximation method (VAM):

Source	Destination				Supply Quantity
	1	2	3	4	
1	10	20	5	7	10
2	13	9	12	8	20
3	4	5	7	9	30
4	14	7	1	0	40
5	3	12	15	19	50
Demand Quantity	60	60	20	10	150

SECTION D – K5 (CO4)

Answer any ONE of the following

(1 x 20 = 20)

13. Calculate Mean, Median and Mode from the following data:

Marks	0 – 10	10 – 20	20 - 30	30 – 40	40 – 50	50 – 60	60 – 70	70 - 80
No. of Students	15	20	25	24	12	31	71	52

14. Following are the data related with the prices and quantity consumed for 2022 and 2023. Construct price index numbers by applying:

- (a) Laspeyre's Method
 (b) Paasche's Method
 (c) Bowley's Method
 (d) Fisher's ideal Method

Commodities	2022		2023	
	Price	Quantity	Price	Quantity
Rice	5	15	7	12
Wheat	4	5	6	4
Sugar	7	4	9	3
Tea	52	2	55	2

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

15. Find the coefficient of correlation for the following data:

Cost (₹.)	Sales (₹.)
39	47
65	53
62	58
90	86
82	62
75	68
25	60
98	91
36	51
78	84

16. Find the initial basic feasible solution for the following transportation problem using the following methods:

(a) North west Corner Rule

(b) Least Cost Method

Source	Destination				Supply Qty.
	1	2	3	4	
1	10	20	5	7	10
2	13	9	12	8	20
3	4	5	7	9	30
4	14	7	1	0	40
5	3	12	15	19	50
Demand Qty.	60	60	20	10	150

#####