



LOYOLA COLLEGE (AUTONOMOUS) CHENNAI – 600 034

B.Com. DEGREE EXAMINATION – COMMERCE

SECOND SEMESTER – APRIL 2025

UBC 2301 – BUSINESS STATISTICS



Date: 05-05-2025

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. Define the following:

- Skewness.
- Properties of correlation coefficient.
- Seasonal indices.
- Intercept & Slope.
- Optimal Solution.

2. Fill in the blanks:

- Find the arithmetic mean for the following data: 12, 15, 10, 9, 11, 16, 14, 6 _____.
- Scattered diagram method is used in _____.
- A time series is arranged in _____ order.
- Multiple regression uses two or more _____ variables to predict the outcome.
- Least cost method is otherwise called as _____.

SECTION A - K2 (CO1)

Answer ALL the Questions

(10 x 1 = 10)

3. Match the Following:

- | | |
|-------------------------------|---|
| a) Empirical relationship | -(i) Cyclic and irregular. |
| b) Coefficient of correlation | -(ii) A basic feasible solution that contains less than $m+n-1$. |
| c) Ratio to trend | -(iii) Perfect goodness of fit. |
| d) Error term | -(iv) lies between -1 & $+1$. |
| e) Degenerated | -(v) $3 \text{ Median} - 2 \text{ Mean}$. |

4. True or False:

- The empirical formula gives the relationship between mean, median and mode.
- The formula used to find Rank correlation, $p = 1 - 6 \sum d^2 / N(N^2 - N)$.
- Time series is nothing but statistical observation arranged in chronological order.
- Linear regression uses one independent variable.
- A feasible solution to a transportation problem is a set of negative allocation.

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

5. Calculate Bowley's coefficient of skewness from the following data.

Marks	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70	70 - 80
No. of persons	10	25	20	15	10	35	25	10

6. Explain the different types of correlation.

7. A sample of 12 fathers and their eldest sons gave the following data about their heights in inches. Find the rank correlation coefficient.

Father	65	63	67	64	68	62	70	66	68	67	69	71
Son	68	66	68	65	69	66	68	65	71	67	68	70

8. Solve the following L.P. problem by graphical method.

Minimize $Z = 5x_1 + 4x_2$

Subject to constraints, $4x_1 + x_2 \geq 40$

$$2x_1 + 3x_2 \geq 90$$

and $x_1, x_2 \geq 0$.

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

9. You are given below the following information about advertising and sales.

	Adv. Exp (X) (in lakhs)	Sales (Y) (in lakhs)
Mean	10	90
S.D.	3	12

Correlation coefficient = 0.8

- Obtain the two regression lines.
- Find the likely sales when advertisement expenditure is Rs. 15 lakhs
- What should be advertisement expenditure if the company wants to attain sales target of Rs.120 lakhs?

10. Write short notes on:

MAE

MSE

MAPE

R Square

11. Calculate 3 yearly moving averages of the production figures given below:

Year	1995	1996	1997	1998	1999	2000	2001
Production	224	213	202	215	222	244	236

12. Obtain initial basic feasible solution to the following transportation problems using NORTH - WEST CORNER RULE:

Warehouse/Stores	S1	S2	S3	Availability
W1	5	4	3	6
W2	4	7	6	8
W3	2	5	8	12
W4	8	6	7	4
Requirement	8	10	12	30

SECTION D – K5 (CO4)

Answer any ONE of the following in 250 words

(1 x 20 = 20)

13. Calculate the mode from the following data:

x	25	30	35	40	45	50	55
f	7	11	17	15	14	10	11

14. Fit a second degree of parabola for the following data and also estimate the value for the year 2000.

Year	1994	1995	1996	1997	1998	1999
Price	100	107	128	140	181	192

SECTION E – K6 (CO5)

Answer any ONE of the following in 250 words

(1 x 20 = 20)

15. Obtain initial basic feasible solution to the following transportation problems using VAM.

Stores/Destination	D1	D2	D3	D4	Supply
S1	19	30	50	10	7
S2	70	30	40	60	9
S3	40	8	70	20	18
Demand	5	8	7	14	34

16. Calculate the regression equation of X on Y and Y on X from the following data and estimate X when Y = 26.

X	10	12	13	17	18	20	24	30
Y	5	6	7	9	13	15	20	21
