



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Com. DEGREE EXAMINATION – COMMERCE

SECOND SEMESTER – APRIL 2016

ST 2104 - BUSINESS STATISTICS

Date: 26-04-2016
Time: 01:00-04:00

Dept. No.

Max. : 100 Marks

SECTION - A

Answer all the questions.

(10 X 2 = 20)

- Find the Mode and Range for the following data 3,6,7,5,9,6,4,8
- What are the various measures of dispersion?
- Write any two properties of Regression line.
- Find the correlation coefficient when $b_{xy} = 0.4$ and $b_{yx} = 1.2$
- What are the various components of a time series?
- Illustrate seasonal variation in a time series with an example
- State the methods of determining the Initial Basic Feasible Solution (IBFS) for a transportation problem
- What is degeneracy in a transportation problem?
- Define saddle point.
- Find the value of the game $\begin{pmatrix} 1 & 1 \\ 4 & -3 \end{pmatrix}$

SECTION- B

Answer any five questions.

(5 X 8 = 40)

- Calculate Mean, Median and Mode for the following data

Class	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	5	8	12	15	6	4

- Find Quartile Deviation for the data given below

Marks	0-4	4-8	8-12	12-16
No. of Students	4	8	2	1

- Calculate Karl Pearson's coefficient of correlation between sales and expenses

Sales	2	4	5	6	8	10
Expenses	8	12	10	8	7	5

- Ten Competitors in a beauty contest are ranked by three judges in the following order

Judge I	1	4	6	3	2	9	7	8	10	5
Judge II	2	6	5	4	7	10	9	3	8	1
Judge III	3	7	4	5	10	8	9	2	6	1

To determine which pair of judges have the nearest approach to common taste in beauty?

- Fit a straight line for the given data and estimate sales for the year 2011

Year	2006	2007	2008	2009	2010
Sales(000s)	35	56	79	80	40

- Determine the optimum solution for the given LPP by Graphical method

Maximize: $Z = 3x_1 + 4x_2$
 Subject to: $x_1 + x_2 \leq 450$
 $2x_1 + x_2 \leq 600$
 And $x_1, x_2 \geq 0$

17. A Firm is engaged in producing two products, A and B. Each unit of product A requires 2 kg of raw material and 4 labour hours for processing, whereas each unit of product B requires 3 kg of raw material and 3 hours of labour, of the same type. Every week, the firm has an availability of 60 kg of raw material and 96 labour hours. One unit of product A sold yields Rs.40 and one unit of product B sold gives Rs.35 as profit.

The market for the two products has been surveyed recently which suggests that a maximum of 20 units of product A and 10 units of product B can be sold per week.

Formulate the problem as a linear programming problem.

18. Solve the following Game

	B ₁	B ₂	B ₃	B ₄
A ₁	18	4	6	4
A ₂	6	2	13	7
A ₃	11	5	17	3
A ₄	7	6	12	2

SECTION- C

Answer any two questions.

(2 X 20 = 40)

19. Goals scored by two teams A and B in a series of football matches were observed as follows.

No. of Goals Scored in a match	No. of Matches	
	Team A	Team B
0	5	4
1	7	5
2	5	5
3	3	4
4	2	3
5	3	3

i) Find which team is more consistent. (14)

ii) Find the Skewness for Team A & Team B. (6)

20. Data on Advertisement Expense and Sales are given below

Advertisement Expense(in lakhs) (X)	7	4	8	6	5	4	6	7
Sales(in lakhs) (Y)	6	5	9	8	2	3	7	3

i) Construct a Regression line of Y on X (8)

ii) Construct a Regression line of X on Y (8)

iii) Estimate Sales when Advertisement expense equal to 66 (4)

21. Calculate seasonal indices by the ratio to moving average method, from the following data:

Year	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter
2006	68	62	61	63
2007	65	58	66	61
2008	68	63	63	67

22. Determine Initial Basic Feasible Solution (IBFS) for the following transportation problem by the method of

a) North west corner rule (5)

b) Least Cost method (5)

c) Vogels Approximation Method (10)

	Destination					Supply
	D ₁	D ₂	D ₃	D ₄		
Origin	O ₁	5	2	4	3	22
	O ₂	4	8	1	6	15
	O ₃	4	6	7	5	8
	Demand	7	12	17	9	
