LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Com. DEGREE EXAMINATION – **COMMERCE**

SECOND SEMESTER – **APRIL 2016**

BC 2104 - BUSINESS STATISTICS

Date: 26-04-2016 Dept. No. Max. : 100 Marks
Time: 01:00-04:00

SECTION A

Answer ALL questions. **(10 x 2 = 20 Marks)**

1. Discuss the merits of geometric mean.
2. Find the harmonic mean of the following data 85, 93, 55, 60, 79
3. Define mean deviation.
4. What is kurtosis?
5. Define rank correlation efficient.
6. Write t is the formula for regression equation y on x?
7. Write short not on LPP.
8. Define 'optimal solution.
9. What is degeneracy and non -degeneracy of transportation problem ?
10. Explain the term saddle point.

a. SECTION B **(4 X 10 = 40 Marks)**

Answer any FOUR questions

11. Find the missing frequency from the following data :

Marks	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60
No. of students	10	20	?	50	40	30

The arithmetic mean is 35 marks

12. Find the Mean Deviation about mean for the following distribution of sales (Rs.in thousands) in a Co-operative store.

Sales	50 – 100	100 – 150	150 – 200	200 – 250	250 – 300	300 - 350
No.of days	11	23	44	19	8	7

13. A study of 100 engineering companies gives the following informations:

Profits(Rs.in crore)	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60
No. ofcompanies	8	12	20	30	20	10

Calculate the mean and standard deviation of the profit earned.

14. Find the rank correlation coefficient between production and sales of a factory for the period given below:

Rank of X	10	4	2	5	8	5	6	9
Ran of y	10	6	2	5	8	4	5	9

15. Explain the various components of time series analysis.

16. What are the different types of models in operation research?

17. Solve the following game, using dominance rule

		Player A		
		A_1	A_2	A_3
Player B	B_1	-2	4	5
	B_2	6	5	3
	B_3	7	3	11

SECTION C **(2 X 20 = 40 Marks)**

Answer any TWO questions

18. (a) Calculate Bowley's coefficient of skewness for the following data:

Annual sales(Rs.in'000)	0 – 200	200– 400	40 0– 600	60 0– 800	800 – 1000	1000 - 1200
No. of items	25	40	80	75	20	16

(b) Compute the four central moments for the following data: 8, 10,11,12,14. Also calculate the value of $\beta 1$ and $\beta 2$ and interpret them.

(12 + 8)

19. (a) Calculate correlation coefficient of the following data:

Production (in thousands)	100	102	104	107	105	112	103	99
Sales (in thousands)	15	12	13	11	12	12	19	26

(b) In a partially destroyed laboratory record of an analysis of correlation data, the following results were obtained. Variance of X = 9

Regression Equations

$8X - 10Y + 66 = 0$

$40X - 18Y = 214$

Find (i) the mean values of X and Y

(ii) the coefficient of correlation between X and Y

(iii) the variance of Y

(10+10)

20. (a) Determine the seasonal Indices for the following data using the method of link relative:

Quarter / *Year*	*I*	*II*	*III*	*IV*
2001	68	62	61	63
2002	65	58	56	61
2003	68	63	63	67
2004	70	59	56	62
2005	60	55	51	58

(b) Calculate the four yearly moving average of the following data and also calculate Short-term Fluctuations.

Year	1991	1992	1993	1994	1995	1995	1996	1997	1998	1999	2000	2001
Production(intonnes)	40	35	38	40	42	37	39	38	41	35	38	42

(10+10)

21.(a) A company produces two types of pens, say A and B. Pen A is a superior quality and pen B is lower quality. Profits on pen A and B are Rs.5 and Rs.3 per pen respectively. Raw materials required for each pen A is twice as that of pen B. The supply of raw materials is sufficient only for 1000 pens. Pen A requires special clips and only 400 clips are available per day. For pen B only 700 clips are available per day. Find graphically the product mix so that the company can make maximum profit.

(b)Find the initial basic feasible solution by using a) Vogel's Approximation Method (VAM)
b) North West Corner Method (NWCR) for the following Transportation problem:

	D1	D2	D3	D4	Availability
A1	48	60	56	48	140
A2	45	55	53	60	260
A3	50	65	60	62	360
A4	52	64	55	61	220
Demand	200	320	250	210	

(10 + 10)