LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

SECOND SEMESTER – APRIL 2010

ST 2102 / 2101 - BUSINESS STATISTICS

Date & Time: 22/04/2010 / 1:00 - 4:00 Dept. No. Max. : 100 Marks

SECTION - A (10 x 2 = 20 Marks)

Answer ALL questions.

1. What are the sources of primary data?
2. What are the different methods of graphical representation of data?
3. State any four properties of a good average.
4. The profits earned by 10 public under taking companies are given below.
   27 32 16 15 10 30 15 29 19 35
   Calculate the range and coefficient of range.
5. Define kurtosis.
6. Define correlation.
7. Illustrate seasonal and cyclical variation in a time series with example.
8. What are index numbers?
9. Define feasible solution.
10. What is degeneracy in a transportation problem.

SECTION - B (5 x 8 = 40 Marks)

Answer any FIVE the questions.

11. Explain in detail about scope of statistics.

12. Determine the median for the following data graphically.

Weight (in kg)	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54
No. of students	6	8	12	9	5

13. Compute quartile deviation and its coefficient for the following data.

Marks	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60
Frequency	8	20	25	30	12	5

14. Find Karl Pearson's coefficient of correlation between advertisement cost and sales based on the following data.

Advertisement cost (in thousands)	5	7	3	1	9	12	8	3
Sales (in lakhs)	8	9	5	4	9	13	7	9

15. Distinguish between correlation and regression.

16. Calculate the trend values by the method of moving averages assuming a four - yearly cycle, for the following data.

Year	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Sugar production	37.4	31.1	38.7	47.9	42.6	13	48.4	64.6	58.4	38.6	51.4	84.4

17. From the data given below, calculate the seasonal indices for I, II, III and IV quarters.

Quarter	1983	1984	1985	1986	1987
I	40	42	41	5	44
II	35	37	35	36	38
III	38	39	38	36	38
IV	40	38	40	41	42

18. Four Jobs can be processed on four different machines, one job on one machine. Resulting profits vary with assignment and are given below:

	Machines				
Jobs		A	B	C	D
	I	42	35	38	21
	II	30	25	20	15
	III	30	25	20	15
	IV	24	20	16	12

Find the optimum assignment of jobs to machines and the corresponding profit.

SECTION - C **(2 x 20 = 40 Marks)**

Answer any TWO questions.

19. (a) From the following data, find mode using empirical formula.

Class interval	3- 4	4 – 5	5 – 6	6 – 7	7 – 8	8 – 9	9 – 10
Frequency	83	27	25	50	75	38	18

(10)

19(b). The mean and standard deviation of 200 items are found to be 60 and 20 respectively. If at the time of calculations two items were wrongly taken as 3 and 67 instead of 13 and 17, find the correct mean and standard deviation. What is the correct coefficient of variation?

(10)

20. Calculate Skewness and Kurtosis for the following data.

Marks	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 - 60
Frequency	5	20	15	45	10	5

21(a).A sample of 12 fathers and their eldest sons gave the following data about their height in inches

Father	65	63	67	645	68	62	70	66	68	67	69	71
Son	68	66	68	65	69	66	68	65	71	67	68	70

Find the rank correlation coefficient. (10)

21(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 value of X and Y

(ii) the coefficient of correlation between X and Y

(iii) the variance of Y. (10)

22(a). Calculate Fisher's price index from the following data and check whether it satisfies the time reversal test.

Commodity	2001		2000	
	Price	Quantity	Price	Quantity
A	4	8	8	6
B	10	10	12	5
C	8	14	10	10
D	4	19	4	13

(10)

22(b) obtain an initial solution to the following transportation problem by Vogel's Approximation method

	X	Y	Z	Supply
A	10	9	8	8
B	10	7	10	7
C	11	9	7	9
D	12	14	10	4
Demand	10	10	8	28

(10)

****