LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

SECOND SEMESTER – NOVEMBER 2016

BC 2104 / ST 2104 - BUSINESS STATISTICS

Date: 15-11-2016 Dept. No. Max. : 100 Marks

Time: 01:00-04:00

SECTION A

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

1. State the empirical relation between the averages.
2. Calculate geometric mean for the following data:
   46 57 58 56 60
3. The mean of 100 items is 70 totals on it were discovered that 172 were wrongly taken as 72, find the correct mean
4. Define range and its coefficients.
5. In a moderately a symmetrical distribution, mean = 65, median = 70 and coefficient of skewness is – 0.6 .Find mode.
6. Define positive and negative correlation.
7. What are the limitations of regression analysis?
8. Explain the nature of the operation research.
9. Define extreme point of the linear programming problem.
10. State 2 x 2 strategy of game.

SECTION B

Answer any FIVE questions **(5X 8 = 40 Marks)**

11. Calculate median for the following data:

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
No of students	15	13	12	16	14	17	20	23	22	20

12. Calculate Mean Deviation about the mean for the following data:

x	12	13	15	16	10
f	5	4	9	6	3

13. Find the standard deviation for the following distribution:

Class Interval	0 – 10	10 – 20	20 – 30	30 - 40	40 – 50	50 – 60
Frequency	10	12	15	14	16	13

14. The first four moments of a distribution about the value 5 are 2, 20, 40 and 50. Obtain the mean, variance, β_1 and β_2.

15. Find the Karl Pearson's coefficient of correlation for the following data:

Demand	98	95	97	96	94	93	90	98	90	92
Supply	87	85	86	85	84	83	80	87	85	86

16. Using three year moving averages determine the trend and short term fluctuations:

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Production	26	23	27	29	32	35	36	29	30	32

17. Find the initial basic feasible solution by using Least Cost Method for the following Transportation problem:

	D_1	D_2	D_3	D_4	D_5	Availability
A_1	9	10	12	13	14	95
A_2	10	13	12	14	19	105
A_3	12	18	20	11	16	100
Demand	60	65	95	30	50	

18.Describe different types of models in operations research.

SECTION C

Answer any TWO questions **(2 X 20 = 40 Marks)**

19. a) Calculate Pearson'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	12	13	16	14	20	23	17

b) The scores of two players A and B in 12 rounds are given below:

A	74	75	78	72	78	77	79	81	79	76	72	71
B	87	84	80	88	89	85	86	82	82	79	86	80

Identify the better player and the more consistent player.

(10 +10)

20. a) Find the quartile deviation from the following frequency distribution.

Marks	0 - 10	10 - 20	20-30	30- 40	40-50	50-60	60- 70
No. of students	12	15	16	20	13	10	11

b)You are given below the following information about advertising and sales

	Adv .Exp(X) (Rs. Lakhs)	Sales (Y) (Rs. Lakhs)
Mean	12	80
S.D	6	18

Correlation coefficients between advertising and sales is 0.8
Obtain the two regression lines.

(i) Find the likely sales when advertisement expenditure is Rs.20 lakhs.

(ii) What should be the advertisement expenditure if the company wants to attain sale target of Rs.130? **(10+10)**

21. Determine the Seasonal Indices for the following data using link relative method.

Quarter / *Year*	*I*	*II*	*III*	*IV*
2011	60	65	68	70
2003	65	67	66	72
2004	68	70	78	85
2005	70	68	74	78

(20)

22.a) Use the graphical method to solve the following LPP.

Maximize Z = $3x + 2y$
Subject to constraints,
$5x + y \geq 10$
$x + y \geq 6$
$x + 4y \geq 12$
$x , y \geq 0$

b) Solve the following game using 2 x 2 strategy:

		Player A a_1	Player A a_2
Player B	b_1	-2	4
	b_2	3	-5

(10 +10)

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