LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

SECOND SEMESTER – **APRIL 2018**

17/16UST2AL01– BUSINESS STATISTICS - II

Date: 28-04-2018 Dept. No. Max. : 100 Marks

Time: 01:00-04:00

SECTION - A

Answer all the questions. (10 X 2 = 20)

1. Define statistics.
2. What are the various measures of central tendency?
3. Write any two properties of correlation coefficient.
4. The lines of regression of a bivariate distribution are as follows: 5X – 145 = -10Y, 14Y -208 = -8X. Find the means of X and Y.
5. What are the various components of a time series?
6. State the principles of least squares.
7. State the methods of determining the Initial Basic Feasible Solution(IBFS) for a transportation Problem.
8. Write two limitations of graphical method in solving LPP?
9. Define a two-person zero sum game.
10. Find the value of the game $\begin{pmatrix} 2 & 1 \\ 3 & 4 \end{pmatrix}$

SECTION- B

Answer any five questions. (5 X 8 = 40)

11. Calculate Mean, Median and Mode for the following data:

Wages	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of Workers	20	45	85	70	55	35	30

12. From the following series, find out Karl Pearson's Coefficient of Skewness:

Measurement	11	12	13	14	15
Frequency	3	9	6	4	3

13. 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

14. Obtain the Rank Correlation coefficient for the following data

X	68	64	75	50	64	80	75	40	55	64
Y	62	58	68	45	81	60	68	48	50	70

15. Fit a straight line for the given data and estimate sales for the year 2017

Year	2009	2010	2011	2012	2013
Sales(000s)	35	56	79	80	40

16. Find the trend of the following time series by the method of 4 yearly moving average and also find short term fluctuations.

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Value	53	79	76	66	69	94	105	87	79	104	97	92	101	105

17. Determine the optimum solution for the given LPP problem by Graphical method

Maximize: $Z = 100x_1 + 40x_2$

Subject to: $5x_1+2x_2 \leq 1000$

$3x_1+2x_2 \leq 900$

$x_1+2x_2 \leq 500$

and $x_1, x_2 \geq 0$

18. Solve the following Game graphically:

		Player K			
		I	II	III	IV
Player L	1	18	4	6	4
	2	6	2	13	7
	3	11	5	17	3
	4	7	6	12	2

SECTION- C

Answer any two questions. (2 X 20 = 40)

19. i) Scores obtained by 2 teams are given below:

Team A	15	10	7	5	3	2
Team B	20	10	5	4	2	1

Which is a more consistent team? **(14)**

ii) Define Skewness, Kurtosis and Moments. **(6)**

20. Data on Advertisement Expense and Sales are given below

Advertisement	22	23	23	24	26	27	27	28	30	30
Sales	18	20	21	20	21	22	23	24	25	26

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

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

iii) Find Correlation Coefficient. **(2)**

iv) Estimate Sales when Advertisement expense equals 25 **(2)**

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

Quarter	Wheat prices (in rupees per quintal)				
	Year→	2011	2012	2013	2014
I		75	86	90	100
II		60	65	72	78
III		54	63	66	72
IV		59	80	85	93

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					
Origin		D_1	D_2	D_3	D_4	Supply
	O_1	1	2	1	4	30
	O_2	3	3	2	1	50
	O_3	4	2	5	9	20
	Demand	20	40	30	10	

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