LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Com. DEGREE EXAMINATION – **COMPUTER APPLICATIONS**

THIRD SEMESTER – **NOVEMBER 2022**

UCC 3301 – BUSINESS STATISTICS

Date: 24-11-2022   Dept. No.   Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

SECTION A		
1. Answer the following questions(5x1= 5Marks)		
a) Define coefficient of variation.	K1	CO1
b) List the merits and demerits of correlation.	K1	CO1
c) Examine the uses of regression lines.	K1	CO1
d) Recall the meaning of Game Theory in Statistics.	K1	CO1
e) State the main two objectives of Transportation Problem	K1	CO1
2. Choose the correct answer (5x1= 5 Marks)		

a) The number of observations in a particular class is called:
   a. Width of the class
   b. Class mark
   c. Frequency
   d. Tendency
	K1	CO1

b) If the mid points of the classes are 16,24,32,40, and so on, then the magnitude of the class interval is:
   a. 8
   b. 9
   c. 7
   d. 6
	K1	CO1

c) The run scored by a batsman in 5 ODIs are 31, 97, 112, 63, and 12. The standard deviation is :
   a. 26.79
   b. 25.79
   c. 24.79
   d. 23.76
	K1	CO1

d) Find the mean of tossing 4 coins
   a. 1
   b. 2
   c. 3
   d. 4
	K1	CO1

e) Find the arithmetic mean of the set of data: 6,1,5,8, and 10
   a. 4
   b. 5
   c. 6
   d. 7
	K1	CO1

3. State True or False (5x1= 5Marks)		
a) Individual differences can be expected for psychological variables such as intelligence, anxiety, and athletic ability. **(True/False)**	K2	CO1

b)	Mean scores are helpful in the interpretation of nominal data. **(True/False)**	K2	CO1
c)	All statistics are numerical statement of facts. **(True/False)**	K2	CO1
d)	Mean, median and mode may be the same for some data **(True/False)**	K2	CO1
e)	A nonlinear relationship is best indexed with a product-moment correlation. **(True/False)**	K2	CO1

4. Fill in the blanks (5x1= 5Marks)

a)	Specialised processes such as graphical and numerical methods are utilised in which of the following?
	    a. Education statistics
	    b. Descriptive statistics
	    c. Business statistics
	    d. Social statistics
		K2	CO1

b)	In the regression equation Y=a+bX, the Y is called:
	    a. Dependent variable
	    b. Independent variable
	    c. Continuous variable
	    d. Binominal variable
		K2	CO1

c)	The transportation problem is basically a
	    a. Maximization model
	    b. Minimization model
	    c. Transhipment problem
	    d. Iconic model
		K2	CO1

d)	When the total allocations in a transportation model of m×n size do not equal to m+n-1 the situation is.
	    a. Unbalanced situation
	    b. Tie situation
	    c. Degeneracy
	    d. Non-degeneracy
		K2	CO1

e)	The method of finding an initial solution based upon opportunity costs is called.
	    a. The northwest corner rule
	    b. Vogel's approximation
	    c. Johanson'sthorem
	    d. Flood's technique
		K2	CO1

SECTION B

Answer TWO out of FOUR (2 x 10 = 20 Marks)

5)	a). Calculate the G.M. of the following quantities: 2,18,32,36,6 b). Compute the harmonic mean for the following data:	K3	CO2

x	10	12	14	16	18	20
f	5	18	20	10	6	1

6)	The sales in tonnes of a commodity varied from 1990 to 2001 as under: 280,300,280,280,270,240,230,230,220,200,210,200 Fit a trend line by the method of semi-averages. Estimate the sales in 2002.	K3	CO2

7)	Fit a straight trend line by the method of least squares and estimate the sales for the year 2014.									K3	CO2

Year	2002	2003	2004	2005	2006	2007	2008	2009
Production	76	80	130	144	138	120	174	190

8)	In a frequency distribution, the coefficient of skewness based on quartiles is 0.6. If the sum of the upper and the lower quartiles is 100 and the median is 38. Find the value of the upper quartile.	K3	CO2

SECTION C

Answer TWO out of FOUR   **(2 x 10 = 20 Marks)**

9)	a) For a distribution Bowley's coefficient of skewness is -0.36, lower quartile is 8.6 and median is 12.3. What is its quartile co-efficient of dispersion? b) In a distribution, mean = 65, median = 70, and coefficient of skewness is -0.6, find (i) Mode, (ii) co-efficient of variation.	K4	CO3

10)	The following table gives the aptitude test scores and productivity indices of 10 workers selected at random.	K4	CO3

Aptitude Scores (X)	60	62	65	70	72	48	53	73	65
Productivity index (Y)	68	60	62	80	85	40	52	62	60

Find the two regression equations and estimate:
   i) The productivity index of a worker whose test score is 92.
   ii) The test score of a worker whose productivity index is 75.

11)	Use the method of monthly averages to find the monthly indices for the following data of production of a commodity for the years 1979, 1980 and 1981.	K4	CO3

Month	Production in lakhs of tons		
	1979	1980	1981
January	12	15	16
February	11	14	15
March	10	13	14
April	14	16	16
May	15	16	15
June	15	15	17
July	16	17	16
August	13	12	13
September	11	13	10
October	10	12	10
November	12	13	11
December	15	14	15

12)	Analyse the two-person Zero sum game with suitable illustrations.	K4	CO3

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SECTION D

13)	The coefficient of rank correlation of the marks obtained by 10 students in two particular subjects was found to be 0.5. It was then detected that the difference in ranks in the two subjects obtained by one of the students was wrongly taken as 3 in the place of 7. What should be the correct rank correlation coefficient?	K5	CO4
14).	For the following table fit a straight-line trend by the method of least square and estimate the sales for the year 2017.	K5	CO4

Year	2009	2010	2011	2012	2013	2014	2015	2016
Sales (in lakhs of Rupees)	38	40	65	72	69	60	87	95

SECTION E

15)	Deseasonalise the following data with the help of seasonal data given below:	K6	CO5

Month	Jan	Feb	Mar	April	May	June
Cash Balance ('000 Rs.)	360	400	550	360	350	550
Seasonal Index	120	80	110	90	70	120

16)	Develop a feasible region on a graph paper satisfying the following restraints. Minimum value function $z = 20x_1 + 10x_2$ subject to $$x_1 + 2x_2 \le 40$$ $$3x_1 + x_2 \ge 30$$ $$4x_1 + 3x_2 \ge 60$$ $$x_1, x_2 \ge 0$$	K6	CO5

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