K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

May-June 2024
B.Tech Program: Computer Engineering Scheme IIB
Regular Examination: TY Semester: VI
Course Code: CEDLC6051 and Course Name: Quantitative Analysis
Date of Exam: 25/05/2024 Duration: 02.5 Hours Max. Marks: 60

Instructions:
(1)All questions are compulsory.
(2)Draw neat diagrams wherever applicable.
(3)Assume suitable data, if necessary.

		Max. Marks	CO	BT level
Q 1	**Solve any six questions out of eight:**	**12**		
i)	Describe Quantitative data with example	2	2	U
ii)	What are the functions of statistics	2	1	R
iii)	Create stem-and-leaf plot for the following list of values: 23.25, 24.13, 24.76, 24.81, 24.98, 25.31, 25.57, 25.89, 26.28, 26.34, 27.09	2	2	Ap
iv)	If $r_{12} = 0.863$, $r_{13} = 0.648$, and $r_{23} = 0.709$ Calculate $\mathbf{R_{1.23}}$	2	4	Ap
v)	When does Multicollinearity occurs in multiple regression	2	4	U
vi)	Describe dependent and independent variable with some suitable exam and show relationship between them	2	3	U
vii)	Describe the Consistency property of point estimator	2	5	U
viii)	Explain in brief the concept of one tailed test and two tailed test	2	6	U
Q.2	**Solve any four questions out of six.**	**16**		
i)	Marks scored by 15 students are given below, Convert the marks into a continuous series of a class-interval of 10 and show tally marks representation 21 35 28 27 33 28 13 22 40 21 33 27 28 35 10	4	1	Ap
ii)	Calculate Karl Pearson's coefficient of correlation taking derivations from the actual means	4	3	Ap

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X	44	46	46	48	52	54	54	56	60	60
Y	36	40	42	40	42	44	46	48	50	52

iii)	Present the following information in a suitable tabular form, In 2005, out of 3000 workers in a factory, 2,100 were members of a trade union. The number of woman workers employed was 500, out of which 400 did not belong to any trade union. In 2006, the number of union workers was 4,000 of which 3,500 were men. The number of non-union workers was 1480, among whom 1175 were women.	4	2	Ap
iv)	Compare census and sampling with suitable example	4	2	U
v)	Describe statistical inference, Type 1 and Type 2 error with suitable example	4	5	U
vi)	A machine runs on an average of 125 hours/year. A random sample of 49 machines has an annual average of 126.9 hours with standard deviation 8.4 hours. Does this suggest to believe that machines are used on the average more than 125 hours annually at 0.05 level of significance. (Note: tabulated value = 1.64)	4	6	Ap
Q.3	**Solve any two questions out of three.**	**16**		
i)	a) Draw a suitable diagram for the following data. (4 Marks)	8	1	An

Year	Sales ('00)	Gross Profit ('00)	Net Profit ('00)
1980	200	30	10
1981	210	40	20
1982	220	75	30
1983	230	60	30

b) Draw a pie diagram from the given data. The selling price of a product contains the following elements of costs and profit (4 Marks)

Prime Cost	26%
Factory Overhead	20%
Administrative Overhead	28%
Selling and Distribution Overhead	22%
Profit	4%

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ii)	Compare Probability and Non probability sampling and Explain types of non-probability sampling	8	2	U
iii)	a)The correlation between a general intelligence test and school achievement in a group of children from 6 to 15 years is 0.80. The correlation between general intelligence test and age in the same group is 0.70 and the correlation between school achievement and age is 0.60, What is the correlation between general intelligence and school achievement in children of same age ? comment on the result (4 marks) b) Given the f 'lowing, determine the regression equation of a) X_3 on X_1 a X_2 (4 marks) $r_{12}=0.28$ $r_{23}=0.49$ $r_{31}=0.51$ $\delta_1= 2.7$ $\delta_2= 2.4$ $\delta_3= 2.7$	8	3	Ap
Q.4	**Solve any two questions out of three.**	**16**		
i)	The following table gives the aptitude test scores and productivity indices of 10 workers selected at random, Calculate two regression equation 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	8	4	Ap
ii)	Describe and derive the maximum likelihood equation for estimating the parameters.	8	5	Ap
iii)	IQ test of two groups of boys and girls gave the following results Is there a significant difference between mean score of boys and girls at 1% LOS [Tabulated value= 2.58]	8	6	Ap

AP. Score-X	60	62	65	70	72	48	53	73	65	82
Productivity Index-Y	68	60	62	80	85	40	52	62	60	81

	Mean	S.D.	Sample Size(n)
Girls	75	15	150
Boys	70	20	250

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