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

May-June 2025
(B. Tech Program: COMPUTER Scheme II B
Regular Examination: TY Semester: VI
Course Code: CEDLC6051and Course Name: Quantitative Analysis
Date of Exam: 29/05/2025 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.

<table>
<tr><th>Q. No.</th><th>Question</th><th>Max. Marks</th><th>CO</th><th>BT level</th></tr>
<tr><td>Q 1</td><td>Solve any two questions out of three: (05 marks each)</td><td>10</td><td></td><td></td></tr>
<tr><td>a)</td><td>Define statistics. Explain the functions and limitations of statistics</td><td></td><td>CO1</td><td>U</td></tr>
<tr><td>b)</td><td>Calculate Karl Pearson's Coefficient of Correlation between age & playing habits from the data given below:
<table>
<tr><td>Age</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td></tr>
<tr><td>No.of students</td><td>500</td><td>400</td><td>300</td><td>240</td><td>200</td><td>160</td></tr>
<tr><td>Regular Players</td><td>400</td><td>300</td><td>180</td><td>96</td><td>60</td><td>24</td></tr>
</table></td><td></td><td>CO3</td><td>An</td></tr>
<tr><td>c)</td><td>Summarize statistical estimation. Explain the properties of a good estimator</td><td></td><td>CO5</td><td>U</td></tr>
<tr><td>Q 2</td><td>Solve any two questions out of three: (05 marks each)</td><td>10</td><td></td><td></td></tr>
<tr><td>a)</td><td>In 1985, out of total 2,000 workers of a factory, 1,500 workers were permanent. The number of women workers was around 300 out of which 200 were temporary. In 1986, the number of workers increased to 2,800 of which 2,000 were men. On the other hand the number of temporary workers fell down to 250 of which 150 were women. Present the data in the form of an appropriate table</td><td></td><td>CO2</td><td>Ap</td></tr>
<tr><td>b)</td><td>The simple correlation coefficients between temperature(X1),corn yield(X2) and rainfall(X3) are r_{12}=0.59,r_{13}=0.46 and r_{23}=0.77.Calculate partial correlation coefficient $r_{12.3}$ and multiple correlation coefficient $R_{1.23}$</td><td></td><td>CO4</td><td>An</td></tr>
</table>

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c)	12 students were given intensive coaching and 5 tests were conducted in a month. The scores of tests 1 and 5 are given. Do the scores from the 1 to 5 show an improvement?			CO6	Ap

No. of students	1	2	3	4	5	6	7	8	9	10	11	12
1st test	50	42	51	26	35	42	60	41	70	55	62	38
5th test	62	40	61	35	30	52	68	51	84	63	72	50

The value of r for 11 degrees of freedom at 5% level of significance is 2.20

Q.3	Solve any **two** questions out of three. (10 marks each)	20		
a)	Explain various methods in the collection of statistical data. Of these, which would you choose? Give reasons		CO1	U
b)	Given the following data of marks in English and Maths of 5 students, estimate the likely marks in English of a student who has scored 15 marks in Maths.		CO3	An

Marks in English	10	14	16	20	15
Marks in Maths	30	32	38	35	40

Estimate the expected marks of a student in Maths who has scored 18 marks in English.

c)	What is hypothesis testing? Explain the process and types of errors in Testing hypotheses.		CO5	U
Q.4	Solve any **two** questions out of three. (10 marks each)	20		

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a)	Draw a pie diagram for the following data of Five year plan public sector outlays Agriculture & Rural Development: 12.9% Irrigation: 12.5% Energy: 27.2% Industry & Minerals: 15.4% Transport & Communication: 15.9% Social services: 16.1%		CO2	Ap
b)	An instructor of Economics wishes to determine the relationship of grades on a final examination to grades on two quizzes given during a semester. Costing X1, X2 and X3 the grades of a student on the first quiz, second quiz and final examination respectively, he made the following computations for a total of 120 students. $\overline{X1} = 6.8$, $\overline{X2} = 7$, $\overline{X3} = 74$ $S1 = 1.0$, $S2 = 0.80$, $S3 = 9.0$ $r_{12} = 0.60$, $r_{13} = 0.70$, $r_{23} = 0.65$ i) Find the least square regression equation of X3 on X1 and X2 ii) Estimate the final grades of two students who scored respectively 9 & 7, 4 & 8 on the two quizzes.		CO4	An
c)	The mean of two single large samples of 1000 and 2000 members are 67.5 and 68 inches. Can the sample be regarded as taken from the same population of standard deviation 2.5 inches? $\alpha = 0.05$ value is 1.96		CO6	Ap

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