[Total No. of CO's: 2] **Seat No:** **[Total No. of Pages: 1]**

G. H. Raisoni College of Engineering and Management, Pune.
(An Autonomous Institution)
F.Y B. Tech (All Branches) (Term-II)
CAE-II (2020 Pattern)

Subject Name: Linear Algebra (UBSL153)

[Time: 1 Hours] **[Max. Marks-15]**

COURSE OUTCOME:
CO1: Apply simple operations like adding, multiplying, inverting, transposing, etc. in matrices & vectors.
CO2: Apply the concepts of Linear Algebra in programming languages. Course Outcomes
CO3: Apply the concepts of least squares methods and basic problems in probability.
CO4: Apply the knowledge of Random variables.
CO5: Apply the knowledge of Probability distributions to solve engineering problems.

CO3 ***a)*** Define Karl-Pearson's Coefficient of correlation and state its properties. **[2]** **L1**

b) Explain Line of Regression of Y on X and X on Y **[2]** **L2**

c) By the method of Least square, find the linear curve that best fits the following data, **[3]** **L3**

X	1	2	3	4	5
Y	1	5	11	8	14

OR

d) Find the correlation coefficient between x and y given, **[3]** **L3**
n=50, $\sum(x_i - 40) = 30$, $\sum(y_i - 20) = 70$, $\sum(x_i - 40)^2 = 170$,
$\sum(y_i - 20)^2 = 165$, $\sum(x_i - 40)(y_i - 20) = 140$

CO4 ***a)*** A random variable X has following probability distribution, **[4]** **L3**

X=x	-3	-2	-1	0	1	2	3
P(X=x)	0.05	0.1	0.15	0.20	0.25	0.15	0.1

Find the probability that, i) X is Positive ii) X is negative iii) X is odd iv) X is even

b) Let X be amount of time for which book is taken out of library by randomly selected student and suppose X has p.d.f. **[4]** **L4**
f(x)=0.5x, for $0 \leq x \leq 2$ and 0 otherwise. Calculate
i) p($x \leq 1$) ii) P($0.5 \leq x \leq 1.5$) iii) P($x \geq 1.5$) iv)c.d.f F(x)