PYTHON FOR DATA SCIENCE

ASSIGNMENT – 1 SRN : PES2UG22EC017

One Mark MCQs

1.Let a = 5 (101 in binary) and b = 3 (011 in binary). What is the result of the following operation? Given , a = 5 b = 3 p r i n t (a & b) Ans : 1

i. 3
ii. 7
iii. 5
iv. 1

2.Which of the following data type is immutable? Ans : tuple

i. List
ii. set
iii. tuple
iv. dictionary

Descriptive type questions

1.Explain K - means clustering

K-Means clustering is an unsupervised learning algorithm used to group data into *k* clusters based on similarity.The algorithm works by first choosing the number of clusters (*k*) and randomly selecting centroids. Each data point is then assigned to the nearest centroid, and the centroids are updated as the mean of the points in their cluster. This process is repeated until the centroids become stable. For example, if we take students' data of study hours vs exam marks, K-Means with *k = 2* may form one cluster of students with high study hours and high marks, and another cluster of students with low study hours and low marks.

K-Means is widely used in applications like customer segmentation, document grouping, and image compression.

2. Differentiate Classification and Regression

	Classification	**Regression**
Type of Output	Discrete classes/labels	Continuous numeric values
Goal	Categorize data into groups	Predict a real-valued outcome
Examples	Spam vs Not Spam, Pass vs Fail	Predicting marks, house prices
Algorithm type	Supervised learning (categorical prediction)	Supervised learning (numerical prediction)