JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2026

M.Tech-I Semester (DS)

COURSE CODE (CREDITS): 22M11CI112 (3) MAX. MARKS: 15

COURSE NAME: Introduction to Data Science

COURSE INSTRUCTOR: HRI MAX. TIME: 1 Hour

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

(c) Use of calculator is not allowed

JUIT TEST-1 EXAMINATION- AUG 2026

Q.No	Question	CO	Marks
Q1	Describe features of python which makes it the preferred language for data science.	CO1	[3]
Q2	Write a Python program that stores student details (name, age, and marks) for multiple students using a collection. Use a loop to display the details of each student, calculate the average marks, convert the collection into a JSON string, and demonstrate an array operation to find the highest marks.	CO2	[3]
Q3	Given the following points points = [(1, -1), (2, 3), (-2, 3), (2, -3)] Explain step-by-step how to manually determine the nearest neighbor using the KD-Tree approach followed by SciPy's `KDTree.query()` method. Show the construction/traversal of the KD-Tree, calculate the Euclidean distance from the query point `(1, 1)` to each relevant point, and determine the final result returned by `kdtree.query((1, 1))`.	CO2	[3]
Q4	Design and implement a Python program to perform basic MongoDB database operations using PyMongo. Create a database named `CollegeDB`, create a collection named `Students`, insert multiple student documents containing fields such as student ID, name, department, and marks, and perform `find()` and query operations to retrieve students based on specific conditions such as department or marks. Display the results of each operation.	CO3	[3]
Q5	Given the sentence *"The students are studying and playing games happily"*, demonstrate how the sentence is tokenized into individual words, how stemming reduces words to their root forms, and how lemmatization converts words into their meaningful base forms. Compare the results obtained from stemming and lemmatization.	CO3	[3]