JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1EXAMINATION- 2025

M.Tech-I Semester (DS)

COURSE CODE (CREDITS):22M11MA111 (3) MAX. MARKS: 15

COURSE NAME: Mathematical Foundation for Data Science

COURSE INSTRUCTORS: RVS 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

Q.No	Question	CO	Marks
Q. 1.	Why data is important for Machine learning. Based on data how you decide which ML approach is used. Give suitable example	CO-1	3
Q. 2.	What is field. What are properties of field. Give example.	CO-1	3
Q. 3.	a) Define linear independence. b) Determine whether the vectors a=(1,2,3)b=(2,4,6)c=(1,0,1) are linearly independent or dependent. Justify.	CO-2	2+2
Q. 4.	a) Every vector space has at least one basis. (True/False) b) If vectors are linearly independent, no vector can be written as a linear combination of others. (True/False) c) If one vector is a scalar multiple of another, they are linearly independent. (True/False) d) In a field, multiplication is commutative. (True/False) e) Data Science is a subset of Machine Learning. (True/False) f) In supervised learning, both input and output labels are available. (True/False) g) The zero vector is always linearly independent (True/False) h) The additive identity in a field is _____. i) The number of vectors in a basis is called the _____. j) Every non-zero element in a field has a multiplicative_____.	CO-2	5