

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -I EXAMINATION- 2025

B.Sc.-V Semester

COURSE CODE (CREDITS): 2, 18BIWCI634

MAX. MARKS: 15

COURSE NAME: Machine Learning

COURSE INSTRUCTORS: Sandeep Kumar Patel

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
Q1	A Machine Learning system is often described as “a system that learns from data rather than being explicitly programmed.” Explain this statement briefly with a suitable example.	1	2
Q2.	Why is feature selection important in Machine Learning systems, and how does it help in reducing overfitting, improving interpretability, and enhancing computational efficiency? Explain the major approaches to feature selection.	1	2
Q3.	Differentiate between supervised, unsupervised, and reinforcement learning in terms of data requirements and learning objectives. Which paradigm would be most suitable for: a. Customer segmentation b. Training a game-playing agent c. Predicting house prices	1	3
Q4.	How does function approximation enable supervised learning models to generalize from training data to unseen data? Illustrate your answer with one linear and one nonlinear example.	1	2+1
Q5.	A real estate company wants to build a model to predict the price of houses based on their size (in square feet). (x = sq. ft., y = price in \$1000): (20,200), (40,300), (60,400), (80,500), (100, 600), $n = 5$	1	4+1
	a. Fit a linear regression model: $y = a + bx$ using least squares method. b. Predict the price of a 70 sq. ft. house using your model.		