

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)

CLASS: B.TECH
BRANCH: ALL

SEMESTER : VII
SESSION : MO/2025

SUBJECT: CS461 FUNDAMENTALS OF MACHINE LEARNING

TIME:02 Hours

FULL MARKS: 25

INSTRUCTIONS:

1. The question paper contains 5 questions each of 5 marks and total 25 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates
-

		CO	BL
Q.1(a)	“Machine Learning has the goal to maximize predictive accuracy”- Express your opinion.	[2] 1	I
Q.1(b)	Evaluate the Machine learning algorithms based on their purpose and use cases.	[3] 2	I
Q.2(a)	How would you choose and represent the target function while designing a learning system. Discuss briefly.	[2] 2	II
Q.2(b)	Analyze the line of best fit in a linear regression model.	[3] 2	III
Q.3(a)	Describe the working principle behind Gradient descent algorithm.	[2] 2	IV
Q.3(b)	Explain the role of Bias and Variance in the model's performance on training and unseen data.	[3] 3	III
Q.4(a)	Illustrate the core reasons for overfitting and underfitting with suitable example.	[2] 2	III
Q.4(b)	Explain Support Vector Machine and the types of kernel functions used by it.	[3] 3	III
Q.5(a)	How does Information Gain aid in finding the most informative turn in a decision tree.	[2] 2	IV
Q.5(b)	Differentiate between Biological neural network and Artificial Neural Network	[3] 3	VI

:::::23/09/2025:::::M