

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

**CLASS: BTECH
BRANCH: ALL**

**SEMESTER : VII
SESSION : MO/2025**

SUBJECT: CS461 FUNDAMENTAL OF MACHINE LEARNING

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
-

		CO	BL
Q.1(a)	Instantiate the learning mechanisms of Machine with some application domains that ML is catering at large.	[5] 1	1
Q.1(b)	Discuss the Feature selection Techniques with emphasis on the various methods adopted to cater to the target variable.	[5] 2	1
Q.2(a)	Differentiate between Linear regression and Logistic regression	[5] 2	2
Q.2(b)	Discuss the various Evaluation metrics employed during model evaluation.	[5] 2	1
Q.3(a)	Illustrate the bias variance tradeoff in ML techniques	[5] 3	2
Q.3(b)	Perform Hierarchical Agglomerative Clustering on the following 3-D points using single linkage and draw the dendrogram. Use taxicab proximity measure. A (2, 3, 1), B (3, 4, 2), C (6, 8, 3), D (8, 9, 5), E (9, 10, 6)	[5] 3	3
Q.4(a)	Explain Feed forward network and Multilayer network in Neural network.	[5] 3	2
Q.4(b)	Discuss expectation maximization method with its application domain	[5] 2	1
Q.5(a)	Discuss the weak learners methods of active learning	[5] 2	2
Q.5(b)	Differentiate between Voting and Boosting schemas of ensemble learning	[5] 2	2

:::25/11/2025:::M