



School of Computer Science and Engineering
Fall Semester 2024-25

CAT I

Programme Name & Branch: B.Tech (CSE)

SLOT: B2+TB2

Course Name & Code: Machine Learning BCSE209L

Class Number (s): VL2024250101726, 101713, 101697, 101719, 101602, 101595,
101708, 101689, 101730, 101737, 101598

Exam Duration: 90 Min.

Maximum Marks: 50

Answer **ALL** questions

1. Find a suitable ML technique for the following applications with justification.

(2 Marks each)

- Estimate the measure of rainfall based on the climatic condition for the given place.
- To identify the disease based on symptoms of the patient and clinical data.
- Based on the student CV and performance, find a suitable model to find if a student can be hired through campus placement or not.
- An automated vacuum cleaner has to autonomously clean the room.
- Government wants to categorize the region of flood affected zone into red, orange and yellow.

2. For the given CAT-I and CAT-II marks apply multi linear regression to find the line fit. Also predict the Term End score of a student who has secured (28, 34) in CAT-I and CAT – II respectively.

(10 Marks)

CAT – I	35	25	14	40	20	39	28
CAT – II	30	35	20	42	27	35	34
Term End	80	70	45	92	33	77	?

3. Apply Naïve Bayes classifier to find if the car with specification (Red, SUV, Domestic) can be stolen or not. (10 Marks)

Example No.	Color	Type	Origin	Stolen?
1	Red	Sports	Domestic	Yes
2	Red	Sports	Domestic	No
3	Red	Sports	Domestic	Yes
4	Yellow	Sports	Domestic	No
5	Yellow	Sports	Imported	Yes
6	Yellow	SUV	Imported	No
7	Yellow	SUV	Imported	Yes
8	Yellow	SUV	Domestic	No
9	Red	SUV	Imported	No
10	Red	Sports	Imported	Yes

4. Apply KNN to find the weight for the given test case (last row ID11).

- Perform KNN for $k=3,5,7$ (7 marks)
- Apply suitable evaluation metrics to find the best k value. (3 Marks)

ID	Height	Age	Weight
1	5	45	77
2	5.11	26	47
3	5.6	30	55
4	5.9	34	59
5	4.8	40	72
6	5.8	36	60
7	5.3	19	40
8	5.8	28	60
9	5.5	23	45
10	5.6	32	58
11	5.5	38	?

5. Apply Back propagation algorithm for XOR gate given below for the input (1,-1) to update new weights. (10 Marks)

