Birla Institute of Technology & Science, Pilani
Work Integrated Learning Programmes Division
First Semester 2024-2025

Mid-Semester Test
(EC-2 Regular)

Course No.	: SS ZG568
Course Title	: Applied Machine Learning
Nature of Exam	: Closed Book
Weightage	: 30%
Duration	: 2 Hours
Date of Exam	: 21/09/2024 (AN)

No. of Pages = 2
No. of Questions = 3

Note to Students:
1. Please follow all the *Instructions to Candidates* given on the cover page of the answer book.
2. All parts of a question should be answered consecutively. Each answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.

Marks 10

Q.1 Given the data below, predict if Example No. 11, Color Red, Type SUV, Origin Domestic will be stolen

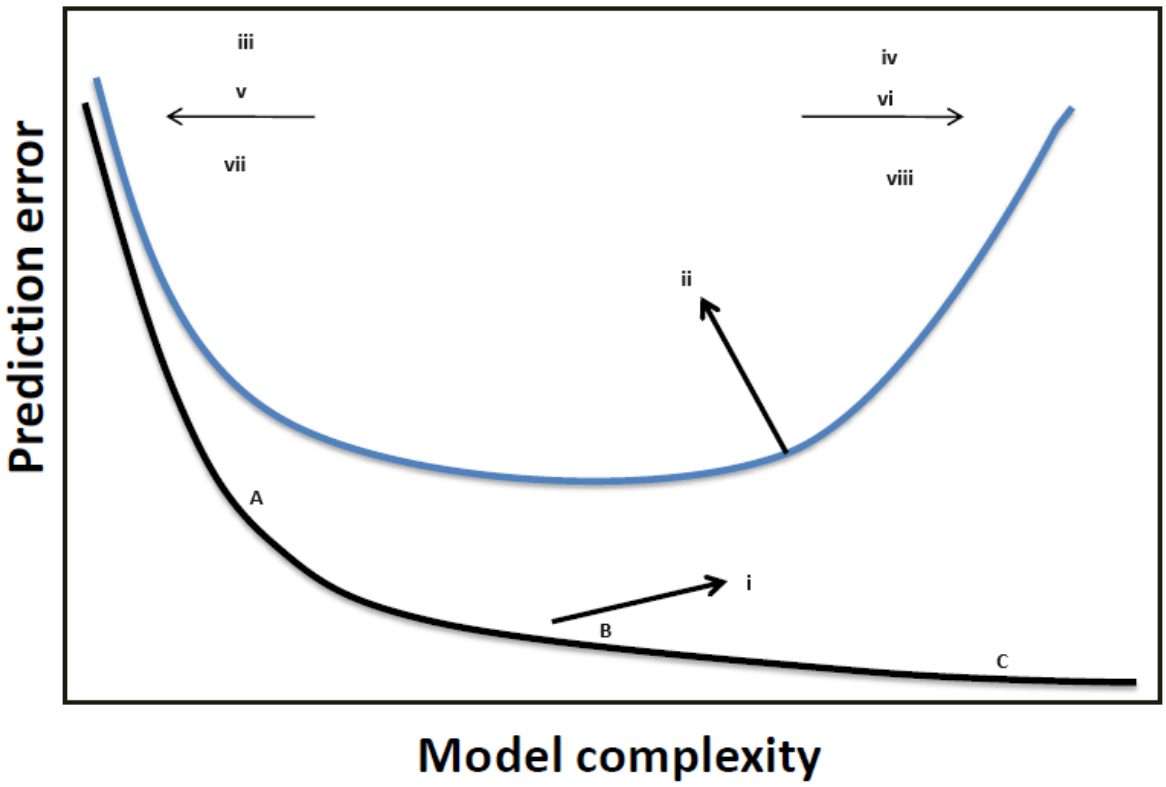
Example No.	Color	Type	Origin	Stolen?
1	Red	Sports	Domestic	Yes
2	Red	Sports	Domestic	No
3	Red	Sports	Domestic	Yes
4	Yellow	Sports	Domestic	No
5	Yellow	Sports	Imported	Yes
6	Yellow	SUV	Imported	No
7	Yellow	SUV	Imported	Yes
8	Yellow	SUV	Domestic	No
9	Red	SUV	Imported	No
10	Red	Sports	Imported	Yes

Use Naïve Bayes, Ignore P(X).

Marks 10

Q.2 The following figure depicts training and validation curves of a learner with increasing model complexity. For the questions below indicate on the graph:

1. Which of the curves is more likely to be the training error and which is more likely to be the validation error?
2. In which regions of the graph are bias and variance low and high? Indicate clearly with four labels: “low variance”, “high variance”, “low bias”, “high bias”.
3. In which regions does the model overfit or underfit? Indicate clearly with label “overfit” and “underfit”.
4. Identify the point where we should stop training.



Marks 10

Q.3 Discuss the different attribute types.