



K. K. Wagh Institute of Engineering Education & Research, Nashik
(An Autonomous Institute From A.Y. 2022-23)

InSem Examination-II Summer 2025	
Exam Seat No.:	
Academic Year: 2024-2025	Semester: IV
Class: SY	Program: B.Tech
Branch Code: ETC	Pattern: 2024
Name of Course: Machine Learning for Engineering and Science Applications	Course Code: 2302216(B)
Max. Marks: 30	Duration: 1.15 Hrs.

Instructions: Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.

1. This question paper contains one page.
2. Answer to each new question is to be started on a new page.
3. Assume suitable data wherever required, but justify it.
4. Draw the neat labelled diagrams, wherever necessary.
5. The last column indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question.

Marks CO

Question No. 1

- 1 a) Define Overflow and Underflow, in the context of machine learning. Calculate the gradient (7) CO1
for $f(x,y) = x^2 + y^2$ at (1,1).

Question No. 2

- 2 a) What is a probability? Explain marginal, union, joint and conditional probability with the help of (8) CO1
Venn diagram.

OR

- 2 b) Given a matrix $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, find its transpose, determinant, and inverse. (8) CO1

Question No. 3

- 3 a) Discuss bagging techniques and how they improve model performance. (7) CO2

Question No. 4

- 4 a) Explain the k-NN algorithm & gradient boosting. (8) CO2

OR

- 4 b) Explain Support Vector Machines (SVMs). What is the role of the kernel trick? (8) CO2

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