

Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat
Department of Computer Science and Engineering
M.Tech. I CSE (I Semester)

CSE605/CSEIS613/CSEDS605 – Machine Learning

Mid Semester Examination - October 2023

Maximum Marks: 30

Date: 11 October 2023

Time: 2:00PM to 03:30PM

Instruction: Write your M. Tech. Admission No./Roll No. and other details clearly on the answer books and write your M.Tech. Admission No. on the question paper, too

Q.1 Answer the following

- a) Illustrate with examples how missing values are handled in machine learning? 2
- b) Explain the steps for developing Machine Learning applications. 3
- c) It is estimated that 50% of emails are spam emails. Some software has been applied to filter these spam emails before they reach your inbox. A certain brand of software claims that it can detect 99% of spam emails, and the probability for a false positive (a non-spam email detected as spam) is 5%. Now if an email is detected as spam, then what is the probability that it is in fact a non-spam email? 2
- d) What are the advantages of wrapper methods over filter methods for feature selection? How is feature selection different from feature extraction? 3

Q.2 Answer the following

- a) What is Inductive Learning ? Explain different types of Inductive Bias. 4
- b) What is a gradient descent algorithm? Where is it used in linear regression? 4
- c) What is Overfitting? Explain different reasons for overfitting. 3
- d) Explain different weighted KNN algorithms and their significance. 3
- e) What is information gain in terms of entropy? Create a decision tree using information gain for the given dataset. 6

Outlook	Temperature	Humidity	Wind	Play
Sunny	Hot	High	Strong	No
Overcast	Hot	High	Weak	No
Rain	Mild	High	Weak	Yes
Rain	Cool	Normal	Weak	Yes
Rain	Cool	Normal	Strong	Yes
Overcast	Cool	Normal	Strong	Yes
Sunny	Mild	High	Weak	No
Sunny	Cool	Normal	Weak	Yes
Rain	Mild	Normal	Weak	Yes
Sunny	Mild	Normal	Strong	Yes
Overcast	Mild	High	Strong	Yes
Overcast	Hot	Normal	Weak	No

