


Name:			
Enrolment No:			
UPES End Semester Examination, May 2024			
Course: Demystifying AI Program: B.Tech CSE (Full Stack AI) Course Code: CSFS 2002 Instructions: There are three Sections. Attempt all sections.		Semester: IV Time : 03 hrs. Max. Marks: 100	
SECTION A (5Qx4M=20Marks)			
S. No.		Marks	CO
Q1.	Describe the interdisciplinary nature of artificial intelligence. Discuss the key fields contributing to AI development.	4M	CO1
Q2.	Discuss the distinction between weak AI and strong AI. Provide examples of each type and explain their respective abilities and limitations.	4M	CO2
Q3.	Discuss the role of artificial intelligence in revolutionizing transportation systems. Give two examples of AI applications in this domain and explain how they contribute to improving safety or efficiency.	4M	CO2
Q4.	Discuss the advantages and limitations of decision trees compared to other machine learning algorithms.	4M	CO3
Q5.	Describe the fundamental principles of support vector machines (SVM) in supervised learning.	4M	CO3
SECTION B (4Qx10M= 40 Marks)			
Q6.	Expand on the concept of K-means clustering algorithm and its iterative process of cluster assignment and centroid updating.	10M	CO3
Q7.	Explain the role of features and labels in supervised learning. Discuss the importance of feature selection and feature engineering in building effective machine learning models.	10M	CO4
Q8.	Discuss the concept of decision trees. Describe how decision trees are constructed, including splitting criteria and pruning techniques. Provide examples of decision tree applications in real-world scenarios.	10M	CO4
Q9.	Bring out the basic principles of linear regression. Discuss the assumptions underlying linear regression models and how they are evaluated. <p style="text-align: center;">OR</p> Define overfitting in the context of machine learning models. Discuss the causes and consequences of overfitting and explain why it is essential to address this issue. Describe at least two regularization techniques used to mitigate overfitting and provide insights into how each technique works to improve the generalization performance of machine learning models.	10M	CO1

SECTION-C
(2Qx20M=40 Marks)

Q10.	Elaborate on the hierarchical clustering approach, including agglomerative and divisive methods, and how they create dendrograms to visualize clustering relationships.	20M	CO5
Q11.	Describe the architecture of a feedforward neural network, including input, hidden, and output layers. <p style="text-align: center;">OR</p> Explain the adversarial training process in GANs, where the generator tries to produce realistic samples while the discriminator distinguishes between real and generated samples.	20M	CO2