



**SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY:: PUTTUR  
(AUTONOMOUS)**

Siddharth Nagar, Narayanavanam Road – 517583

**QUESTION BANK (DESCRIPTIVE)**

Subject with Code: **Advanced Machine Learning(20CS0906)**

Course & Branch: **B.Tech – CSM**

Regulation: **R20**

Year & Sem: **III-B.Tech & II – Sem**

**UNIT –I  
INTRODUCTION**

1	A	Explain the working process of Machine Learning and its Applications.	[L2][CO1]	[6M]
	B	Analyze Well Posed Problems in machine learning with examples.	[L4][CO1]	[6M]
2	A	List out various applications of Machine Learning in real world.	[L1][CO1]	[6M]
	B	Explain the forms of Learning in Machine Learning.	[L2][CO1]	[6M]
3	A	Differentiate Machine Learning and Artificial Intelligence.	[L6][CO5]	[6M]
	B	Describe Types of Data in Machine Learning.	[L2][CO1]	[6M]
4	A	In How many ways the data can be represented in Machine Learning.	[L1][CO5]	[6M]
	B	Compare structured , unstructured and semi structured data in machine learning	[L5][CO2]	[6M]
5		Explain about the three different types of machine learning techniques with neat diagrams.	[L2][CO3]	[12M]
6	A	Illustrate the domain knowledge for the productive use of Machine learning	[L3][CO1]	[6M]
	B	Compare Data Mining Vs Machine Learning	[L6][CO1]	[6M]
7	A	Compare Supervised learning and Unsupervised learning	[L6][CO1]	[6M]
	B	Analyze Reinforcement Learning with neat diagram..	[L4][CO1]	[6M]
8		Discuss the Diversity of Data in Machine learning with suitable examples.	[L2][CO2]	[12M]
9		Analyze the Intelligent Machine Well Posed Problems and representation of data in machine learning with suitable examples.	[L4][CO1]	[12M]
10	A	Analyze the basic Linear Algebra in machine learning	[L4][CO2]	[6M]
	B	Explain the real world applications of ML.	[L2][CO6]	[6M]

**UNIT-II****SUPERVISED LEARNING**

1	a	Explain about the Supervised learning with neat architecture and its techniques.	[L2][CO2]	[8M]
	b	Differentiate Supervised Learning and Unsupervised Learning	[L4][CO5]	[4M]
2	a	List out the various regression techniques in supervised learning.	[L2][CO1]	[4M]
	b	Explain Linear models for Regression in Machine Learning.	[L2][CO1]	[8M]
3	a	Interpret the linear basis function models in supervised learning	[L4][CO2]	[6M]
	b	Explain about Bias-variance decomposition techniques.	[L2][CO2]	[6M]
4	a	List out various common regression algorithms explain it.	[L2][CO2]	[6M]
	b	Analyze Bayesian Linear Regression with simple example.	[L4][CO2]	[6M]
5	Summarize the following models. (i) Linear regression (ii) Logistic regression		[L2][CO1]	[12M]
6	a	Organize how to Tackle Over fitting and Under fitting.	[L4][CO3]	[6M]
	b	Compare Linear Regression and logistic regression in machine learning.	[L2][CO2]	[6M]
7	a	Illustrate Multiple Linear regression in supervised learning.	[L3][CO3]	[6M]
	b	Explain about Linear Discriminant analysis	[L2][CO]2	[6M]
8	Discuss Simple Linear, polynomial Regression and regularization techniques in supervised learning.		[L2][CO3]	[12M]
9	Analyze three linear models for the classification in supervised learning.		[L4][CO3]	[12M]
10	a	Compare Probabilistic Generative model and Discriminative models.	[L6][CO3]	[6M]
	b	List out the categorization of probabilistic models explain it.	[L2][CO3]	[6M]

**UNIT –III****UNSUPERVISED LEARNING**

1		Analyze the unsupervised learning and its techniques with suitable examples.	[L2][CO3]	[12M]
2	a	Explain the various Clustering algorithms.	[L2][CO3]	[8M]
	b	List out the various applications of clustering.	[L1][CO3]	[4M]
3	a	Illustrate the any one of latent variable models with suitable example.	[L3][CO3]	[6M]
	b	Explain applications of EM algorithm.	[L1][CO3]	[6M]
4	a	Analyze the working principle of K-means Clustering.	[L4][CO3]	[7M]
	b	Give the different types of Clustering algorithms used in clustering.	[L2][CO3]	[5M]
5	a	List out the various types of Cluster methods in unsupervised learning.	[L1][CO3]	[8M]
	b	Infer the similarities and differences between average-link clustering and k-means?	[L4][CO3]	[4M]
6	a	Generalize K-Means Clustering algorithm in Unsupervised Learning with simple example.	[L6][CO3]	[6M]
	b	Analyze the mixture of latent variable models.	[L5][CO4]	[6M]
7		Describe the various types of Hierarchal Clustering techniques.	[L2][CO4]	[12M]
8	a	Analyze the Expectation-Maximization algorithm with simple Example.	[L4][CO4]	[6M]
	b	Explain about Supervised learning after clustering.	[L2][CO4]	[6M]
9	a	Demonstrate linkage methods in Hierarchical Clustering.	[L2][CO4]	[6M]
	b	Compare Divisive and Agglomerative clustering.	[L6][CO4]	[6M]
10		Summarize the following terms briefly i.K-means Clustering    ii. Hierarchal Clustering	[L2][CO4]	[12M]

**UNIT-IV**  
**DIMENSIONALITY REDUCTION**  
**&**  
**NONPARAMETRIC METHODS**

1	a	Explain about Dimensionality reduction and its techniques	[L2][CO5]	[6M]
	b	List out the categories of features subset selection and explain it.	[L2][CO5]	[6M]
2	a	Discuss the Principle Component Analysis.	[L2][CO5]	[6M]
	b	List out the Applications of PCA in machine learning.	[L1][CO5]	[6M]
3	a	Describe the Factor Analysis Technique.	[L2][CO5]	[6M]
	b	List out the applications of Factor Analysis.	[L1][CO5]	[6M]
4	a	Explain Linear Discriminant Analysis.	[L2][CO5]	[8M]
	b	Outline the various applications of Linear Discriminant Analysis.	[L1][CO5]	[4M]
5	a	Compare Multidimensionality scaling and Metric dimensionality scaling.	[L5][CO5]	[6M]
	b	List out the applications of MDS.	[L1][CO5]	[6M]
6		State and explain various Non-Parametric Density Estimation techniques	[L1][CO5]	[12M]
7	a	Analyze the K-Nearest Neighbor Algorithm with simple example.	[L4][CO5]	[6M]
	b	Express the Non Parametric classification Techniques.	[L6][CO5]	[6M]
8	a	Illustrate Condensed Nearest Neighbor (CNN).	[L3][CO5]	[6M]
	b	Differentiate Exploratory and Confirmatory factor analysis.	[L5][CO5]	[6M]
9	a	Distinguish between parametric and non-parametric classifications.	[L4][CO5]	[6M]
	b	Define and Explain about Non parametric Methods.	[L2][CO5]	[6M]
10	a	List out Advantages and limitations of Non parametric methods in ML.	[L1][CO5]	[6M]
	b	List out and explain the various dimensionality reduction techniques.	[L2][CO5]	[12M]

**UNIT –V****REINFORCEMENT LEARNING**

1	a	Define and explain about the Reinforcement learning.	[L2][CO6]	[6M]
	b	Compare unsupervised learning and Reinforcement learning.	[L4][CO6]	[6M]
2	a	Explain various types of reinforcement learning techniques.	[L2][CO6]	[6M]
	b	List out the advantages and disadvantages of Reinforcement Learning.	[L1][CO6]	[6M]
3	a	List the applications of Reinforcement Learning and explain it.	[L2][CO6]	[6M]
	b	Differentiate the Reinforcement learning and Supervised learning.	[L4][CO6]	[6M]
4		Analyze the working process of Reinforcement learning.	[L4][CO6]	[12M]
5	a	Explain in detail about Single State Case: K-Armed Bandit problem	[L2][CO6]	[6M]
	b	What are the Elements involved in Reinforcement Learning using Markov Decision Process (MDP)?	[L1][CO6]	[6M]
6	a	Explain Model-Based Learning with an example.	[L2][CO6]	[6M]
	b	Distinguish between model based learning and temporal difference learning.	[L5][CO6]	[6M]
7	a	Illustrate in detail about K-Armed Bandit in reinforcement learning.	[L3][CO6]	[6M]
	b	Describe Exploration and Exploitation strategies in temporal difference learning.	[L1][CO6]	[6M]
8	a	Describe various parameters used in Temporal Difference Learning.	[L2][CO6]	[6M]
	b	List out the advantages, disadvantages of Temporal difference learning.	[L2][CO6]	[6M]
9	a	Explain the Nonparametric rewards and actions in temporal difference learning.	[L2][CO6]	[6M]
	b	Assess in detail about partially observables states in Reinforcement learning.	[L5][CO6]	[6M]
10	a	Explain Generalization process in Model Based Learning.	[L2][CO6]	[6M]
	b	Difference between Model based learning and Model free learning	[L1][CO6]	[6M]