

**DPU** Dr. D. Y. PATIL INSTITUTE OF TECHNOLOGY, Pimpri, Pune  
**Department of AI & DS**  
**Prelim Examination Semester-I (Year: 2024-2025)**

Sem:I

Date: /10/2025

Prelims examination	
Year and Div.: BE	Maximum Marks:70
Subject: Machine Learning (Set 1)	Duration: 2Hr 30 min
Subject Code: 417521(A) Note: All Questions are compulsory Neatly write the answers.	

CO	Blooms Level	QN	Questions	Marks
CO3	L2	Q1.a.	Write a note on Support Vector Machine.	6M
CO3	L5	Q1.b.	Differentiate between Radial Basis Kernel, Gaussian, Polynomial, and Sigmoid kernels	6M
CO3	L4	Q1.c.	What is the difference between balanced and imbalanced classification problems? Why can imbalanced data be problematic, and how might it affect model performance?	5M
OR				
CO3	L4	Q2.a.	Differentiate between Binary - vs - Multiclass Classification.	6M
CO4	L4	Q3.b.	Define the DBSCAN algorithm.	6M
CO4	L3	Q3.c.	What are the different applications of Clustering Techniques?	5M
OR				
CO4	L4	Q3.a.	Explain Gaussian mixture model with Example.	9M
CO4	L4	Q3.b	Explain Divisive Hierarchical clustering algorithm with example	9M
OR				
CO4	L2	Q4.a	Explain K- Means Clustering algorithm. State advantage and disadvantage of K-Means Clustering.	9M
CO5	L2	Q4.b	What is Gradient Boosting? How does it optimize model performance?	9M

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CO5	L2	Q5.a.	Differentiate the Bagging and Boosting approach of ensemble learning.	6M
CO5	L2, L3	Q5.b.	Explain random forest ensembles with example	6M
CO5	L2	Q5.c.	Compare Homogeneous and Heterogeneous ensemble methods.	5M
OR				
CO5	L4	Q6.a.	Explain different types of voting	6M
CO5	L4	Q6.b.	Explain different types of voting	6M
CO5	L4	Q6.c.	What is ensemble Learning? What are advantages and disadvantages of ensemble Learning.	5M
OR				
CO6	L4,L5	Q7.a.	What is Reinforcement Learning? Explain with an example	6M
CO6	L4	Q7.b.	Explain positive reinforcement and negative reinforcement with examples	6M
CO6	L2	Q7.c.	How do different types of reinforcement influence an agent's learning behavior?	6M
OR				
CO6	L2	Q8.a.	What is Q-Learning? How does it differ from other reinforcement learning techniques?	6M
CO6	L4	Q8.b.	Explain Q Learning.	6M
CO6	L2,L4	Q8.c.	What is the Markov property? Explain with a simple example.	6M

!!!!!!!!!!!!!! All The Best !!!!!!!!!!!!!!!