Code No: R2032033 **R20** SET -1

III B. Tech II Semester Regular Examinations, July -2023
INTRODUCTION TO ARTIFICIAL INTELLIGENCE & MACHINE LEARNING
(Mechanical Engineering)

Time: 3 hours Max. Marks: 70

Answer any FIVE Questions ONE Question from Each unit
All Questions Carry Equal Marks
*****

UNIT-I

1.	a)	Illustrate the various application areas of AI.	[7M]
	b)	What is learning? Explain learning in neural networks.	[7M]
		(OR)	
2.	a)	What is an AI technique? Give its evolution over years.	[7M]
	b)	Define neural network. Give its representation.	[7M]
		UNIT-II	
3.	a)	Explain in detail about Knowledge based agents.	[7M]
	b)	Explain the predicate logic representation and inference in predicate logic with a suitable example.	[7M]
		(OR)	
4.	a)	Discuss about pattern representation Propositional Logic.	[7M]
	b)	Compare inference in propositional logic with inference in first order logic.	[7M]
		UNIT-III	
5.	a)	Describe the features of Bayesian learning methods.	[7M]
	b)	Write about various applications of ML in industry and real world.	[7M]
		(OR)	
6.	a)	Discuss in detail about K-Nearest neighbour learning.	[7M]
	b)	Define Machine Learning. Explain the need and its evolution.	[7M]
		UNIT-IV	
7.	a)	Explain in detail about Decision Tree with an example.	[7M]
	b)	Discuss in detail about Soft Margin SVM. How to identify soft margin?	[7M]
		(OR)	
8.	a)	Discuss in detail about Distance Based Clustering. Write its importance in machine learning.	[7M]
	b)	Explain about K-means algorithm with an example. Describe its convergence	[7M]
		UNIT-V	
9.	a)	What is Ensemble modeling? Discuss about Bagging and Boosting.	[7M]
	b)	Describe in detail about neural networks role in machine learning.	[7M]
		(OR)	
10.	a)	Elaborate various ways to evaluate a machine learning model's performance.	[7M]
	b)	Give the merits and demerits of Deep generative models.	[7M]

Code No: R2032033 **R20** SET -2

III B. Tech II Semester Regular Examinations, July -2023
INTRODUCTION TO ARTIFICIAL INTELLIGENCE & MACHINE LEARNING
(Mechanical Engineering)

Time: 3 hours Max. Marks: 70

Answer any FIVE Questions ONE Question from Each unit
All Questions Carry Equal Marks
*****

UNIT-I

1.	a)	Explain the various problem characteristics of AI.	[7M]
	b)	Describe the mathematical model of perceptron with example.	[7M]
		(OR)	
2.	a)	Give the applications of Artificial Intelligence in real world.	[7M]
	b)	Briefly explain about multilayer networks. Compare them with single layer networks.	[7M]

UNIT-II

3.	a)	What are the merits and demerits of propositional logic in Artificial Inteligence?	[7M]
	b)	Explain the following (i)Knowledge based agents (ii)Logical Agents	[7M]
		(OR)	
4.	a)	Explain unification algorithm with suitable example	[7M]
	b)	Discuss about Inference in Propositional Logic.	[7M]

UNIT-III

5.	a)	Describe kNN Algorithm for data classification with appropriate example.	[7M]
	b)	Explain about binary classification and related tasks.	[7M]
		(OR)	
6.	a)	Explain about Naïve Bayes Classifier with example.	[7M]
	b)	Compare and contrast Supervised Learning with Unsupervised Learning.	[7M]

UNIT-IV

7.	a)	Explain about Principal Component Analysis in detail. How will assist in dimensionality reduction?	[7M]
	b)	Summarize Distance-based methods in Machine Learning.	[7M]
		(OR)	
8.	a)	Describe SVM algorithm with example.	[7M]
	b)	Explain in detail about Dimensionality Reduction. Compare various methods used for it.	[7M]

UNIT-V

9.	a)	Discuss in detail about representation of Neural Networks.	[7M]
	b)	Write about various Applications of Deep Networks.	[7M]
		(OR)	
10.	a)	Explain Random Forest algorithm with an example.	[7M]
	b)	Elaborate on the factors to be considered for selecting a machine model.	[7M]

Code No: R2032033 **R20** SET -3

III B. Tech II Semester Regular Examinations, July -2023
INTRODUCTION TO ARTIFICIAL INTELLIGENCE & MACHINE LEARNING
(Mechanical Engineering)

Time: 3 hours Max. Marks: 70

Answer any FIVE Questions ONE Question from Each unit
All Questions Carry Equal Marks
*****

UNIT-I

1.	a)	What do you mean by Artificial Intelligence (AI)? Explain contribution of AI in various fields.	[7M]
	b)	Explain about Intelligent Agents. Give their role in AI.	[7M]
		(OR)	
2.	a)	Discuss design issues of artificial neural networks.	[7M]
	b)	Explain about back propagation algorithm with an example.	[7M]
		UNIT-II	
3.	a)	Discuss about patterns in Propositional Logic.	[7M]
	b)	Mention the categories of hill climbing search. What are the reasons that hill climbing often get struck?	[7M]
		(OR)	
4.	a)	Write about logical agents and its representation.	[7M]
	b)	Explain the predicate logic representation with suitable example.	[7M]
		UNIT-III	
5.	a)	Discuss in detail about Naïve Bayes classification with relevant example.	[7M]
	b)	Explain about Instance based learning with example.	[7M]
		(OR)	
6.	a)	Distinguish between supervised and unsupervised learning.	[7M]
	b)	Explain in detail about Gibbs Algorithm.	[7M]
		UNIT-IV	
7.	a)	How dimensionality reduction takes place using PCA? Illustrate.	[7M]
	b)	Discuss various Kernel methods in machine learning.	[7M]
		(OR)	
8.	a)	What kind of data is suitable for SVM? How does SVM avoid overfiting?	[7M]
	b)	How does a decision tree handle continuous data? Illustrate.	[7M]
		UNIT-V	
9.	a)	Discuss about Deep auto-encoders. Give their applications.	[7M]
	b)	Distinguish between restricted Boltzmann machine and deep Boltzmann machine.	[7M]
		(OR)	
10.	a)	How Random Forest algorithm works? Explain in detail.	[7M]
	b)	Explain the process of evaluating Machine Learning algorithms.	[7M]

Code No: R2032033 **R20** SET -4

III B. Tech II Semester Regular Examinations, July -2023
INTRODUCTION TO ARTIFICIAL INTELLIGENCE & MACHINE LEARNING
(Mechanical Engineering)

Time: 3 hours Max. Marks: 70

Answer any FIVE Questions ONE Question from Each unit
All Questions Carry Equal Marks
*****

UNIT-I

1.	a)	Define Artificial Intelligence. Explain the techniques of AI. Also describe the characteristics of Artificial Intelligence.	[7M]
	b)	What is meant by intelligent agents and give its structure.	[7M]
		(OR)	
2.	a)	Explain about Genetic algorithms in detail.	[7M]
	b)	Discuss in detail about Multilayer Networks.	[7M]
		UNIT-II	
3.	a)	Write about logical agents and its representation.	[7M]
	b)	Compare best first search strategy with depth first strategy.	[7M]
		(OR)	
4.	a)	What are the standard quantifiers used in first order logic? Explain them with examples.	[7M]
	b)	Describe the role of CNF /DNF in resolution .	[7M]
		UNIT-III	
5.	a)	Write about Bayes theorem with example.	[7M]
	b)	"Instance based learning is lazy learning". Justify.	[7M]
		(OR)	
6.	a)	Explain about minimum description length principle.	[7M]
	b)	Discuss about various applications of ML in industry and real world.	[7M]
		UNIT-IV	
7.	a)	Describe Nearest-Neighbor Classification in detail.	[7M]
	b)	Give the merits and demerits of K–means algorithm? How to overcome the demerits of it?	[7M]
		(OR)	
8.	a)	Explain how Support Vector Machine can be used for classification of linearly separable data.	[7M]
	b)	Explain how dimensionality is reduced using PCA.	[7M]
		UNIT-V	
9.	a)	Write about various Applications of Deep Networks.	[7M]
	b)	What are the factors need to be considered for evaluating machine learning algorithms? Explain them	[7M]
		(OR)	
10.	a)	Describe in detail about neural networks role in machine learning.	[7M]
	b)	How to model time series data in machine learning? Illustrate.	[7M]