Roll No. : .....

Galgotias College of Engineering and Technology, Greater Noida

Pre University Test (PUT) : Odd / Even Semester 2024 - 25

Course/Branch	:	**MBA Common**	**Semester**	**: III**
Subject Name	:	**AI and Machine Learning for Business**	**Max. Marks**	**: 100**
Subject Code	:	**KMBNIT02**	**Time**	**: 180min**

CO-1 : To understand the need of Machine Learning & Statistics for solving various Problems.

CO-2 : To understand the basic concepts of Supervised and Unsupervised learning.

CO-3 : To apply regression analysis on the data available.

CO-4 : To design appropriate machine learning and apply on real world problems.

CO-5 : To optimize different Machine Learning &Deep Learning Techniques.

Section – A# 20 Marks(Short Answer Type Questions)

Attempt **ALL** the questions. Each Question is of 2 marks (10 x 2 = 20 marks)

Q. No.		COx	Question Description # Attempt **ALL** the questions. Each Question is of 2 marks
1	a	CO1	Name two advantages of using AI. (K1)
	b	CO1	Explain historical data. (K2)
	c	CO2	Define supervised learning. (K1)
	d	CO2	Define the term "training set" in machine learning. (K1)
	e	CO3	Explain clustering in unsupervised learning. (K2)
	f	CO3	What is an association rule in data mining? (K1)
	g	CO4	Define a multilayer perceptron (MLP). (K1)
	h	CO4	What is the purpose of gradient descent in neural networks? (K1)
	i	CO5	What is the main goal of Q-learning? (K1)
	j	CO5	Define Deep Q-Learning. (K1)

Section – B# 30 Marks (Long / Medium Answer Type Questions)

Attempt **ALL** the questions. Each Question is of 6 marks(5 x 6 = 30 marks)

Q.2 (CO-1) : Compare machine learning from traditional programming. (K5)
OR
Discuss challenges faced by machine learning models in terms of data quality. (K6)

Q.3 (CO-2) : Explain the purpose of the regression line in regression analysis.(K2)
OR
Elaborate the way machine learning assist in dynamic pricing for businesses. (K6)

Q.4 (CO-3) : Discuss K-means clustering working and its primary objective. (K6)
OR
Discuss some practical applications of unsupervised learning in different domains. (K6)

Q.5 (CO-4) : Explain how backpropagation help train deep neural networks.(K2)
OR
Discuss the roles of pooling and fully connected layers in a convolutional neural network. (K6)

Q.6 (CO-5) : Elaborate the role of the reward function in a Markov Decision Process (MDP).(K6)
OR
Explain how reinforcement learning applied in game-playing AI systems. (K2)

Section – C# 50 Marks (Medium / Long Answer Type Questions)

Attempt **ALL** the questions. Each Question is of 10 marks.

Q.7 (CO-1) : Attempt any ONE question. Each question is of 10 marks.

a. Explain the significance of data sources in AI systems and how data quality impacts model performance. (K5)

b. Identify two key issues in machine learning and explain how data science differs from machine learning in practice. (K3)

Q.8 (CO-2) : Attempt any ONE question. Each question is of 10 marks.

a. Discuss common evaluation metrics for regression models. (K6)

b. Compare Decision Trees and K-Nearest Neighbors (KNN) algorithms in terms of their working principles, strengths, weaknesses and applications in classification problems. (K5)

Q.9 (CO-3) : Attempt any ONE question. Each question is of 10 marks.

a. Compare K-means clustering and DBSCAN in terms of methodology, advantages, and limitations, providing examples of when each should be used.(K5)

b. Explain the applications of unsupervised learning in domains such as healthcare, finance, and marketing highlighting the impact of clustering and association rules.(K5)

Q.10 (CO-4) : Attempt any ONE question. Each question is of 10 marks.

a. Discuss the importance of activation functions in deep learning and compare commonly used functions.(K6)
b. Explain recent applications of deep learning in fields such as healthcare, finance and autonomous systems. (K5)

Q.11 (CO-5) : Attempt any ONE question. Each question is of 10 marks.

a. Explain the challenges of reinforcement learning such as exploration-exploitation trade-off and reward sparsity and discuss possible solutions. (K5)

b. Discuss how Deep Q-Learning use neural networks to approximate Q-values and its advantages. (K6)