Reg No.:_____ Name:_____

0400RAT402052402

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Eighth Semester B.Tech Degree Supplementary Examination August 2024 (2019 Scheme)

Course Code: RAT402

Course Name: AI AND MACHINE LEARNING

Max. Marks: 100 **Duration: 3 Hours**

PART A

Answer all questions, each carries 3 marks. Marks

1		Explain the concept of artificial intelligence.	(3)
2		What is meant by Turing test?	(3)
3		How random forest differs from the decision tree algorithm?	(3)
4		Explain the context in which unsupervised learning can be applied.	(3)
5		Explain the role of activation function in a neural network.	(3)
6		Explain Convolutional Neural Network with neat sketch.	(3)
7		Differentiate between computer vision and machine vision.	(3)
8		List the basic image processing operations.	(3)
9		Define robotic perception.	(3)
10		What is localization in Robotics?	(3)

PART B

Answer any one full question from each module, each carries 14 marks.

Module I

11	a)	Discuss five different applications of AI in Visual processing.	(8)
	b)	Explain the importance of NLP in language translation.	(6)

OR

12	a)	What is the role of expert systems in artificial intelligence.	(8)
	b)	Explain in detail how artificial intelligence can be applied for processing speech?	(6)

Module II

13	a)	Explain supervised learning and unsupervised learning techniques in machine learning with neat sketch.	(8)
	b)	Describe the various steps involved in Support Sector Machine algorithm with neat sketch.	(6)

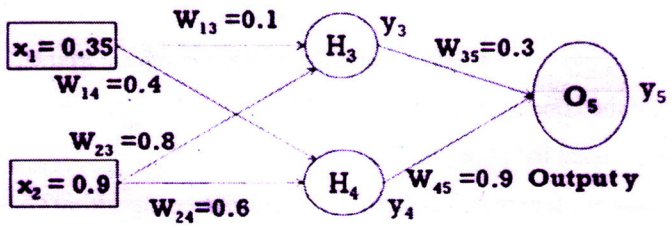
OR

14 a) With necessary diagrams, compare the gradient descent with stochastic gradient descent. (8)

b) With the help of an example, explain the basic elements of reinforcement learning. (6)

Module III

15 Assume that the neurons have a sigmoid activation function. Perform a forward pass on the network. Assume that the actual output of y is 0.5. (14)



OR

16 Solve XOR problem using Multi-Layer Perceptrons (14)

Module IV

17 List out the basic image processing operations. Select an application field and explain these operations in that context. (14)

OR

18 a) How image segmentation is carried out using thresholding? (8)

b) What are the major challenges associated with image classification and detection. (6)

Module V

19 Using block diagram, explain how machine learning algorithm can make robot perception more efficient? (14)

OR

20 Discuss in detail the application domains of Robotics in manufacturing industries for spray painting. Explain with the help of neat sketch. (14)

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