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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Eighth Semester B.Tech Degree (R, S) Examination May 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 various foundations that contributed ideas, viewpoints, and techniques to AI.	(3)
2		List three difference between machine learning and deep learning.	(3)
3		Mention three unsupervised learning algorithms.	(3)
4		Explain the concept of reinforcement learning.	(3)
5		Draw the back-propagation algorithm architecture.	(3)
6		Describe gradient based learning method.	(3)
7		Give three applications of machine vision.	(3)
8		What are the challenges in image detection?	(3)
9		Explain the term localization in Robotics.	(3)
10		List the application of robot in health care.	(3)

PART B

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

Module I

11	a)	Discuss in detail the Turing test with necessary diagrams.	(8)
	b)	Explain in detail how artificial intelligence can be applied in providing vision to robots.	(6)

OR

12	a)	Discuss about the expert systems in artificial intelligence with the help of an example.	(8)
	b)	What is the role of deep learning in speech processing.	(6)

Module II

13	a)	With neat sketches explain supervised and unsupervised learning.	(8)

	b)	Explain reinforcement learning and discuss its basic elements.	(6)

OR

14	a)	Explain how stochastic gradient descent differs from the gradient descent with the help of neat diagrams.	(8)
	b)	Give three industrial applications each for supervised learning and unsupervised learning.	(6)

Module III

15		Solve XOR problem using multi-layer perceptrons with neat sketch.	(14)

OR

16	a)	Explain basic recurrent neural network architecture and the functionality of its each layer.	(10)
	b)	Explain in detail any two industrial applications of convolutional neural network.	(4)

Module IV

17		With a neat block diagram, describe the basic image processing operations.	(14)

OR

18	a)	Elaborate the steps involved in edge detection technique.	(8)
	b)	How computer vision can be utilized for effective traffic sign detection?	(6)

Module V

19		Discuss in detail the role of Machine learning in Robotic perception.	(14)

OR

20		Discuss in detail the application domains of Robotics in manufacturing industries for welding purposes. Explain with the help of neat sketches.	(14)

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