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### Mid Semester Examination 2025

Name of the Course: M.Tech

Semester: II

Name of the Paper: Reinforcement  
learning

Paper Code: MCS - 253

Time: 1.5 hour

Maximum Marks: 50

**Note:**

- (i) Answer all the questions by choosing any one of the sub questions
- (ii) Each question carries 10 marks.
- (iii) Please specify COs against each question.

<b>Q1</b>	
(a)	What was the original perceptron designed to do?
(b)	Can a single perceptron solve complex problems, or are there limitations?
<b>Q2</b>	
(a)	What is a sigmoid neuron, and how is it different from a basic perceptron?
(b)	What is a multilayer perceptron (MLP)?
<b>Q3</b>	
(a)	What is the role of hidden layers in an MLP?
(b)	Explain Perceptron learning algorithm and explain each step?
<b>Q4</b>	
(a)	Name one historical milestone that contributed to the development of deep learning.
(b)	Compare and contrast the representational power of a single perceptron with that of a s Discuss the advantages of using sigmoid neurons in terms of differentiability and funct approximation
<b>Q5</b>	

(a)	What is gradient descent, and what is its purpose in training neural networks?
(b)	What does gradient descent do to the weights of a neural network?

**Note** For the question paper setters:

- Question paper should cover all the COs of the course.