U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

February / March 2023 Semester End Main Examinations

Programme: B.E. **Semester: V**
Branch: Artificial Intelligence and Machine Learning **Duration: 3 hrs.**
Course Code: 22AM5PCINN **Max Marks: 100**
Course: Introduction to Neural Networks **Date: 01.03.2023**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

1	a)	What are the applications of Neural Networks?	**4**
	b)	List out the different types of Network Architectures.	**6**
	c)	Discuss about knowledge representation and its rules in detail.	**10**

OR

2	a)	Illustrate the following Learning process through signal flow graph. Provide the equation. i. Error correction Learning. ii. Competitive Learning.	**8**
	b)	Describe the architectural graph of network for solving the XOR Problem and network signal flow graph.	**4**
	c)	Derive the model of associative memory using mathematical equations and diagrams.	**8**

UNIT - II

3	a)	Define Multilayer Perceptron.	**3**
	b)	Prove Perceptron Convergence Theorem.	**8**
	c)	Investigate the simplicity of the Least Mean Square (LMS) algorithm.	**9**

UNIT - III

4	a)	Mention the limitations of Back Propagation Learning.	**2**
	b)	Compute the inverse Hessian Matrix.	**10**

	c)	Identify how the supervised learning viewed as an optimization problem? Justify.	**8**

OR

5	a)	Categorize the factors influenced in Generalization.	**2**
	b)	Explain the network pruning techniques in neural networks.	**10**
	c)	Appraise the accelerated convergence of back propagation learning using heuristics.	**8**

UNIT - IV

6	a)	What is the significance of Cover's Theorem?	**2**
	b)	Formulate the regularization theory.	**8**
	c)	Infer the approximation properties of Radial Basis function networks.	**10**

UNIT - V

7	a)	Categorize the basic feature mapping models.	**2**
	b)	Derive the Learning Vector Quantization. In this context, explain what is meant by the term Voronoi Tessellation.	**10**
	c)	Explain concept of contextual maps with example.	**8**

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