

CMR ENGINEERING COLLEGE: : HYDERABAD**UGC AUTONOMOUS****IV–B.TECH–II–Semester End Examinations (Advanced Supply) – June - 2025****DEEP LEARNING****(CSD)****[Time: 3 Hours]****[Max. Marks: 70]****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 20 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A**(20 Marks)**

1. a) Name any two basic models of ANN. [2M]
- b) Explain about supervised learning network. [2M]
- c) Define Fixed Weight Competitive Networks. [2M]
- d) Distinguish between unsupervised learning networks and supervised learning networks. [2M]
- e) Illustrate any two historical trends in Deep Learning. [2M]
- f) Demonstrate the key applications of Deep Learning. [2M]
- g) Define adversarial training. [2M]
- h) What are sparse representations? Explain. [2M]
- i) Summarize the role of adaptive learning rates in deep learning. [2M]
- j) Analyze how deep learning is used in speech recognition? [2M]

PART-B**(50 Marks)**

- 2.a) Demonstrate the architecture of Hopfield network. [5M]
 - b) Examine different Training Algorithms for pattern association. [5M]
- OR**
- 3.a) Explain about back propagation for training a network. [5M]
 - b) Discuss the architecture and working of a Perceptron Network. [5M]
4. Demonstrate the architecture and training of learning vector quantization. [10M]
- OR**
- 5.a) Analyze how Kohonen self-organizing feature maps work? [5M]
 - b) Illustrate the Adaptive Resonance Theory Network and its significance. [5M]
6. What is a deep feed-forward network? Explain gradient-based learning in a feed forward network. [10M]
- OR**
- 7.a) Outline in detail about hidden units. [5M]
 - b) Summarize various Differentiation Algorithms used in Deep Learning. [5M]
8. What do you mean by regularization? Explain any two regularization techniques. [10M]
- OR**
- 9.a) Compare and contrast bagging and other ensemble methods in machine learning. [5M]
 - b) Explain the concept of tangent distance, tangent prop, and manifold in deep learning. [5M]
- 10.a) What are the challenges in neural network optimization? Explain. [5M]
 - b) What are various implementations available for large-scale deep learning? [5M]
- OR**
- 11.a) Discuss various parameter initialization strategies and their impact on training deep models. [5M]
 - b) Outline the key challenges and advancements in applying deep learning to natural language processing. [5M]
