Code: 20CS4701A

IV B.Tech - I Semester – Regular Examinations - DECEMBER 2023

DEEP LEARNING
(COMPUTER SCIENCE & ENGINEERING)

Duration: 3 hours   Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

BL – Blooms Level   CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I					
1	a)	Discuss loss functions in the context of deep neural networks. How do they play a critical role in training models?	L2	CO1	7 M
	b)	Define Deep Learning and briefly explain its significance in the field of machine learning.	L2	CO1	7 M
OR					
2	a)	Discuss the key components of a deep neural network architecture? List and briefly describe each component.	L2	CO1	7 M
	b)	Explain the concept of activation functions in deep learning. Provide examples of common activation functions and their roles.	L2	CO1	7 M

UNIT-II

3	a)	Explain the main purpose of a Restricted Boltzmann Machine (RBM) in deep learning. How does it differ from a standard neural network?	L4	CO2	7 M
	b)	Define Autoencoders and discuss their role in unsupervised learning. How do they work to encode and decode input data?	L2	CO2	7 M

OR

4	a)	Explain the concept of pretraining in Unsupervised Pretrained Network and how it helps initialize deep neural networks for supervised tasks.	L4	CO2	7 M
	b)	Construct the architecture of a Deep Belief Networks (DBNs) and provide a real-world example.	L3	CO2	7 M

UNIT-III

5	a)	Show the purpose of using pooling in CNNs, and how does it contribute to feature extraction and dimensionality reduction?	L3	CO3	7 M
	b)	Name two commonly used efficient convolution algorithms and briefly explain their advantages.	L2	CO3	7 M

OR

6	a)	Interpet the neuroscientific basis for Convolutional Neural Networks (CNNs).	L3	CO3	7 M

	b)	Discuss the different data types that CNNs can process and how the choice of data type affects network architecture.	L2	CO3	7 M

UNIT-IV

7	a)	Compare and contrast LSTM and GRU, highlighting their respective advantages and disadvantages.	L4	CO3	7 M
	b)	Illustrate the components and workflow of an Encoder-Decoder model.	L3	CO3	7 M

OR

8	a)	Explain the concept of sequence modeling in the context of deep learning. What makes sequence data different from other types of data in machine learning?	L4	CO3	7 M
	b)	Describe the core idea behind Deep Recurrent Networks and how they extend the capabilities of standard RNNs.	L2	CO3	7 M

UNIT-V

9	a)	Analyze the role of Deep Learning in Computer Vision.	L4	CO4	7 M
	b)	Illustrate the primary objective of Deep Learning in Natural Language Processing (NLP)? How do deep neural networks handle complex language understanding tasks?	L3	CO4	7 M

		OR			
10	a)	Explain the challenges and regulatory aspects of deploying autonomous vehicles in real-world scenarios.	L4	CO4	7 M
	b)	Show the architecture of deep learning-based speech recognition system and its applications in real-world scenarios.	L3	CO4	7 M