PVP 20

Code: 20CS4701A

IV B.Tech - I Semester – Regular / Supplementary Examinations
OCTOBER 2024

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)	Describe the concept of Deep Learning. Explain its historical evolution and how it differs from traditional machine learning approaches.	L2	CO1	7 M
	b)	Compare and Contrast any three common activation functions.	L2	CO1	7 M
		OR			
2	a)	Discuss the significance of hyperparameters in performance of the model training.	L2	CO1	7 M
	b)	Explain at least three real-world applications where deep learning has shown significant success.	L2	CO1	7 M

UNIT-II					
3	a)	Distinguish the key differences between a Variational Autoencoder (VAE) and a Traditional Autoencoder (TAE)? How does a VAE enable generating new data samples.	L4	CO2	7 M
	b)	Demonstrate the fundamental idea behind Deep Belief Networks (DBNs).	L3	CO2	7 M
OR					
4	a)	Construct the architecture of Generative Adversarial Networks (GANs) with an example.	L3	CO2	7 M
	b)	Describe the architecture and training process of a Restricted Boltzmann Machine (RBM) and provide one example.	L2	CO2	7 M
UNIT-III					
5	a)	What are structured outputs in the context of CNNs, and why are they important in tasks like image segmentation or object detection? Explain with an example.	L4	CO3	7 M
	b)	Describe the concept of random or unsupervised features in CNNs.	L2	CO3	7 M
OR					
6	a)	Explain two efficient convolution algorithms used in CNNs.	L4	CO3	7 M
	b)	Compare and Contrast max pooling and average pooling, highlighting their strengths and weaknesses.	L4	CO3	7 M

UNIT-IV					
7	a)	Construct the architecture of an LSTM cell and how it retains and updates information over time.	L3	CO3	7 M
	b)	What is the primary role of an Encoder-Decoder architecture in sequence-to-sequence tasks? Discuss with an example.	L2	CO3	7 M
OR					
8	a)	Explain the concept of Deep Recurrent Networks (DRN) and how it enables the modeling of complex sequential dependencies.	L4	CO3	7 M
	b)	Illustrate the core idea behind Gated Recurrent Unit (GRU) and how they extend the capabilities of standard RNNs.	L3	CO3	7 M
UNIT-V					
9	a)	Discuss the significance of Deep Learning in the field of Speech Recognition.	L2	CO4	7 M
	b)	Illustrate the application of Deep Learning in the healthcare domain with an example.	L3	CO4	7 M
OR					
10	a)	Demonstrate the evolution of deep neural networks in Computer Vision and their impact in image processing applications.	L3	CO4	7 M
	b)	Explain the impact of deep learning in improving machine translation, sentiment analysis.	L4	CO4	7 M