B.Tech. (Computer Science & Engineering / Computer Technology / Computer Engineering / Information Technology) Seventh Semester (C.B.C.S.)

Program Elective-IV : Deep Learning

P. Pages : 2

PSM/KW/23/2877/2888/2910/2899

Time : Three Hours

* 2 5 8 6 *

Max. Marks : 70

Notes :
1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Due credit will be given to neatness and adequate dimensions.
8. Assume suitable data whenever necessary.

1.	a)	What is deep learning, Explain its uses and application and history.	7
	b)	What is activation Functions? Why activation functions are required?	7
		OR	
2.	a)	How a single perceptron can be used to represent the Boolean functions such as AND, OR.	7
	b)	Explain Back propagation with its algorithm.	7
3.	a)	What is Gradient Descent (GD) and its types with help of diagram.	7
	b)	What is an Epoch? Explain in detail how the Epoch size may vary.	4
	c)	What is Loss/Cost Functions? How it is improved.	3
		OR	
4.	a)	Differentiate between Gradient Descent and Stochastic Gradient Descent.	7
	b)	Explain briefly about the Gradient Descent Algorithm.	4
	c)	Explain Momentum Based Gradient Descent.	3
5.		Explain the following w.r.t. Back Propagation algorithm. Convergence and Local Minima, Representational Power of Feedforward Networks, Hypothesis Space Search and Inductive Bias, Hidden Layer Representations, Generalization, Overfitting, and Stopping Criterion.	14
		OR	
6.	a)	What is Regularization? How does Regularization helps in Overfitting?	5
	b)	What are GD optimization methods and which optimizer to use?	6

	c)	What is the problem of vanishing Gradient? Describe various solutions to this problem.	3
7.	a)	Illustrate Convolution operation in CNN with an example.	7
	b)	Explain the architecture of VGG.	7

OR

8.	a)	Explain the architecture of AlexNet.	4
	b)	What are pooling layers in CNN? Illustrate Max pooling with an example.	5
	c)	Differentiate Convolutional neural networks and Generative adversarial networks.	5
9.	a)	What is Recurrent Neural Network (RNN)? State and explain types of RNN in brief.	7
	b)	Describe the general layout of a Long Short-Term Memory Network (LSTM) with suitable diagram.	7

OR

10.	a)	Define the following.	7
		i) Non convex optimization	
		ii) RNN language models	
		iii) Recurrent networks.	
	b)	Explain LSTM in detail.	7

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