INDIAN INSTITUTE OF INFORMATION TECHNOLOGY UNA
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SCHOOL OF COMPUTING
CURRICULUM: IIITUGCSE22
Cycle Test – II
10-OCTOBER-2023

Degree	B. Tech.	**Branch**	CSE/ECE/IT
Semester	VII		
Subject Code & Name	CSSE12 – Deep Learning		
Time: 60 Minutes	**Answer All Questions**		**Maximum: 20 Marks**

Sl. No.	Question	Marks
1.a	What is the Saddle point problem in neural networks?	(1)
1.b	Explain the key differences between Adagrad, Adadelta, RMSprop, and Adam optimization methods for neural networks. When would a specific method be preferred over the other, and why?	(2)
1.c	Regularization techniques like dropout, drop connect, and batch normalization play a crucial role in preventing overfitting. Compare and contrast these techniques, discussing their respective strengths and weaknesses.	(2)
2.a	How do Gated Recurrent Units differ from standard RNNs?	(1)
2.b	Recurrent Neural Networks are prone to the vanishing gradient problem. How does this problem affect the training of RNNs, and how do Long Short-Term Memory and Gated Recurrent Units address it?	(2)
2.c	Explain the concept of "Backpropagation Through Time" in the context of training Recurrent Neural Networks. What challenges does BPTT pose, and how can they be mitigated?	(2)
3.a	What is the primary purpose of Gibbs Sampling in MCMC?	(1)
3.b	Explain the concept of padding in CNNs, and how it impacts the spatial dimensions of feature maps during convolution.	(2)
3.c	Describe the key differences between Restricted Boltzmann Machines and Autoencoders, highlighting their strengths and weaknesses in generative modeling tasks.	(2)
4.a	What role does weight sharing play in CNNs?	(1)

4.b	Describe the concept of "layer-wise pretraining" in training Deep Boltzmann Machines, and discuss its role in initializing the weights of the network for more effective training.	(2)
4.c	What is the Metropolis-Hastings algorithm, and how does it work in the context of Markov Chain Monte Carlo sampling? Provide an example of its application.	(2)

GOOD LUCK!