Register No: ……………………   Name: ....

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)
(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)
EIGHTH SEMESTER B.TECH DEGREE EXAMINATION(R), MAY 2024
Computer Science and Engineering
(2020 SCHEME)

Course Code	:	20CST412	
Course Name	:	**Deep Learning**	
Max. Marks	:	**100**	**Duration:3 Hours**

PART A
(Answer all questions. Each question carries 3 marks)

1. How does the perceptron learning algorithm work, and what is its role in training single-layer perceptrons?

2. What are the strategies used to identify and escape local optima during optimization?

3. What are the common challenges associated with training deep feedforward networks?

4. How AdaGrad adapts the learning rate for each parameter during training?

5. How do convolutional filters and pooling layers enforce structural constraints and promote translation invariance in CNNs?

6. How does the size of the convolutional filter affect the feature representation in CNNs?

7. How does an RNN handle sequential data? Explain the concept of recurrence in RNNs?

8. How does the Gated Recurrent Unit (GRU) differ from the LSTM? What are the advantages of LSTM?

9. How the Continuous Bag of Words (CBOW) architecture works?

10. What is a Boltzmann Machine and what distinguishes it from other types of neural networks?

PART B
(Answer one full question from each module, each question carries 14 marks)
MODULE I

11. What role do gradients play in backpropagation, and how are they calculated for each layer in the network with an example?   14

OR

12. How does gradient descent optimize the weights and biases of a neural network, and how does it help in enhancing a deep learning model's accuracy?   14

MODULE II

13. What are the different regularization techniques used in deep learning? Discuss their advantages and disadvantages, with examples.   14

OR

14. How does dropout impact the training process of neural networks by randomly deactivating neurons during each training iteration? What advantages does dropout offer in comparison to   14

other regularization techniques when training neural networks?

MODULE III

15. Explain the trade-offs between computational efficiency and model performance when employing different efficient convolution algorithms?   14

OR

16. How do stride and padding affect the output size of a convolutional layer, and what are their implications for the network?   14

MODULE IV

17. Describe Deep Recurrent Networks and its architecture in detail.   14

OR

18. How are Encoder-Decoder models applied in machine translation tasks, and what are their advantages over traditional approaches?   14

MODULE V

19. How do autoencoders contribute to tasks such as data compression, and feature learning?   14

OR

20. What are the various methodologies employed in speech recognition, and how do they differ in terms of their approaches and underlying principles?   14

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