

[This question paper contains 2 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 7838

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Unique Paper Code : 6333490012

Name of the Paper : Foundations of Deep Learning (NEP UGCF)

Name of the Course : **B.VOC (WEB DESIGNING)**

Semester : VIII

Duration : 3 Hours

Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. **All** Questions in **Section-A** are compulsory.
3. Attempt any **four** questions from **Section-B**.
4. Parts of a question should be attempted together.

Section A

- Q1. i. Explain the role of Deep Learning in speech and image recognition. 5
- ii. Differentiate between supervised learning and unsupervised learning. 5
- iii. Define Dropout and explain how it improves generalization. 5
- iv. What is Dropout in Deep Learning? Explain why it is used. 5
- v. Define sequence-to-sequence model with one real-world application. 5
- vi. What is denoising Auto encoder and why is it used? 5

Section B

- Q2. (a) Explain the sigmoid function and its role in Logistic Regression classification. 8
- (b) Compare Momentum, SGD, and Adam optimization methods. 7
- Q3. (a) Explain backpropagation algorithm step by step in neural network training. 8
- (b) Discuss methods used for avoiding overfitting in Deep Learning models. 7

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- Q4. (a) Explain CNN architecture with convolution, activation, and pooling layers. 8
(b) Discuss applications of CNN in computer vision and NLP. 7
- Q5. (a) Explain Recurrent Neural Network architecture with diagram. 8
(b) Discuss the vanishing gradient problem and its solutions. 7
- Q6. (a) Explain different types of Autoencoders with suitable examples. 8
(b) Explain VAEs and compare them with traditional Autoencoders. 7
- Q7. (a) Explain data preprocessing steps before training a Deep Learning model. 8
(b) Write short notes on Bias-Variance Tradeoff and Multi-task Learning. 7