School of Information Technology
Rajiv Gandhi Proudyogiki Vishwavidyalaya
(University Teaching Department Madhya Pradesh)

B.Tech (ALML) VI Semester Jan- June 2025
AL602 DEEP LEARNING
ASSIGNMENT 2

No	Questions	CO	Bloom's level
1	List the different types of filters used in convolutional neural networks (CNNs).	CO3	I
2	Describe the architecture of AlexNet and highlight how it was innovative at the time of its introduction.		II
3	Apply convolution and max pooling operations on a sample image, using a simple CNN model . What changes do you observe in the feature maps?	CO3	III
4	Compare and contrast the architectures of VGG, GoogleNet, and ResNet in terms of depth, connectivity, and computational efficiency.	CO3	IV
5	Assess the strengths and limitations of R-CNN models in object detection tasks.	CO3	V
6	What is backpropagation through time (BPTT), and how does it differ from standard backpropagation	CO4	I
7	Explain the vanishing gradient problem in the context of RNNs. Why does it occur?	CO4	II
8	Illustrate the architecture of a Long Short-Term Memory (LSTM) unit. What roles do the gates play?	CO4	II
9	Apply a Bidirectional LSTM to a text sentiment classification task. What improvements do you observe compared to a unidirectional model?	CO4	III
10	Compare and contrast Bidirectional RNN, Gated RNN Architecture	CO4	IV

11	Define a Residual Network (ResNet) and describe its main components.	CO5	I
12	Explain the purpose of skip connections in deep neural networks. How do they help in training?	CO5	II
13	Compare how ResNet and a plain CNN perform on a deep classification task. Analyze the role of skip connections in the difference.	CO5	IV
14	Analyze the architecture requirements for image segmentation compared to object detection. What are the major differences in design?	CO5	IV
15	Explain the differences between image classification, object detection, and semantic segmentation.	CO5	V

Submission Date:09/05/2025 (2 30 pm to 5 pm)