Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

Mid - Term Examinations – October 2025

Date: 27-10-2025 **Time:** 11.00am to 12.30pm

School: SOCSE/SOE	**Program:** B. TECH	
Course Code: CAI3429	**Course Name:** Deep Learning Techniques for Computer Vision	
Semester: VII	**Max Marks**: 50	**Weightage**: 25%

CO - Levels	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
Marks	**24**	**26**	**-**	**-**	**-**

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks. **5Q x 2M=10M**

1	List the common optimization algorithms used in training Convolutional Neural Networks.	**2 Marks**	**L1**	**CO1**
2	Define the term Region Proposal Network (RPN) used in Faster R-CNN.	**2 Marks**	**L1**	**CO1**
3	Why is pooling used after convolution operations in a CNN?	**2 Marks**	**L2**	**CO2**
4	Differentiate between R-CNN and YOLO object detection approaches.	**2 Marks**	**L2**	**CO2**
5	What happens when the convolution kernel size increases in a CNN layer?	**2 Marks**	**L2**	**CO2**

Part B

Answer the Questions. **Total Marks 40M**

6.	**a.**	Explain the architecture of a Convolutional Neural Network with a neat diagram and discuss the role of each layer.	**10 Marks**	**L2**	**CO1**
	b.	Demonstrate how backpropagation works in CNN with an example.	**10 Marks**	**L3**	**CO1**
		Or			
7.	**a.**	Analyze how different activation functions (ReLU, Sigmoid, Tanh, Softmax) affect CNN training performance.	**10 Marks**	**L4**	**CO1**
	b.	Evaluate the advantages and limitations of transfer learning compared to training a CNN from scratch.	**10 Marks**	**L5**	**CO1**

8.	**a.**	Describe the working principle of Faster R-CNN with the role of Region Proposal Network (RPN).	**10 Marks**	**L2**	**CO2**
	b.	Apply the YOLO detection concept to explain how real-time object detection is achieved.	**10 Marks**	**L3**	**CO2**
		Or			
9.	**a.**	Analyze the difference between semantic and instance segmentation with suitable examples.	**10 Marks**	**L4**	**CO2**
	b.	Evaluate the effectiveness of U-Net architecture in medical image segmentation tasks.	**10 Marks**	**L5**	**CO2**