Name: **Enrolment No:**	

UPES

End Semester Examination, December 2025

Course: Deep Learning **Semester: V**

Program: BSc, BCA **Time: 03 hrs.**

Course Code: CSAI3025P **Max. Marks: 100**

Instructions: Please attempt all questions and attempt the choices wherever provided. Scientific Calculator is allowed.

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q1	Difference between batch GD and SGD with example.	**4**	**CO2**
Q2	Explain the role of bias in a neuron.	**4**	**CO2**
Q3	State the universal approximation theorem.	**4**	**CO1, CO2**
Q4	Explain padding and stride in CNNs with examples.	**4**	**CO2, CO3**
Q5	Define latent space and explain continuity requirements in VAEs.	**4**	**CO2**
SECTION B **(4Qx10M= 40 Marks)**			
Q6	Train a perceptron to learn the OR gate with truth table (0,0→0), (0,1→1), (1,0→1), (1,1→1). Initial weights=0, bias=0, lr=1. Show epochs.	**10**	**CO3**
Q7	Explain Batch Normalization and why it accelerates training.	**10**	**CO4**
Q8	Compute SVD of A=[[1,2],[2,1]] and explain dimensionality reduction.	**10**	**CO3, CO4**
Q9	Compare semantic, instance, and panoptic segmentation. **OR** Describe ResNet architecture with skip connections.	**10**	**CO4**
SECTION-C **(2Qx20M=40 Marks)**			

Q10	Explain vanishing gradients in RNNs and how gated units solve it.	**20**	**CO2, CO4**
Q11	Explain GAN workflow, minimax loss, and training dynamics. **OR** Explain Seq2Seq with attention and give examples.	**20**	**CO4, CO5**