Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

Mid - Term Examinations – October 2025

Date: 08-10-2025 **Time:** 11.45am to 01.15pm

School: SOCSE AND SOIS	**Program:** B.TECH	
Course Code : CAI3400	**Course Name:** IMAGE PROCESSING AND ANALYSIS	
Semester: V	**Max Marks**: 50	**Weightage**: 25%

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

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	Define spatial resolution	**2 Marks**	**L**	**CO1**
2	Define brightness adaptation.	**2 Marks**	**L**	**CO1**
3	Define Gray level slicing.	**2 Marks**	**L**	**CO2**
4	Explain Bit plane slicing	**2 Marks**	**L**	**CO2**
5	Define Histogram Specification.	**2 Marks**	**L**	**CO2**

Part B

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

6.	**a.**	Explain sampling and quantization in digital image processing with diagrams	**10 Marks**	**L**	**CO1**
	b.	Explain the fundamental steps in a digital image processing system with a neat diagram.	**10 Marks**	**L**	**CO1**
Or					

7.	**a.**	Explain color fundamentals and models (RGB, CMY/CMYK, HIS).	**10 Marks**	**L**	**CO1**
	b.	Explain adjacency, connectivity, and region properties in images with examples.	**10 Marks**	**L**	**CO1**

8.	**a.**	Explain the Basic Gray Level Transformations functions	**10 Marks**	**L**	**CO2**
	b.	Perform Histogram Equalization and Histogram Matching non a 3 bit image (L=8) of size 64 x 64 pixels. The intensity distribution of the image is given below and find the actual value of the given P(z) using histogram matching	**10 Marks**	**L**	**CO2**

Gray level	0	1	2	3	4	5	6	7
No of pixel	790	1023	850	656	329	245	122	81
P(z)	0	0	0	0.15	0.20	0.30	0.20	0.15

Or

9.	**a.**	i. Explain Homomorphic Filtering ii. Perform Histogram Equalization of the image	**10 Marks**	**L**	**CO2**

4	4	4	4	4
3	4	5	4	3
3	5	5	5	3
3	4	5	4	3
4	4	4	4	4

	b.	Explain the following i. Smoothing Spatial Filters ii. Spatial Averaging	**10 Marks**	**L**	**CO2**