

M.Sc. (A.I. & M.L.) Sem.-2 Examination
Computer Vision

Time : 3.00 Hours]

July-2025

[Max.Marks : 100

SECTION I

- Q1.(a) Define the following (ANY SIX): [09]
- i. Image
 - ii. Neighbours
 - iii. Spatial resolution
 - iv. Region
 - v. Laplacian matrix
 - vi. Histogram
 - vii. Structural element
 - viii. Hit or Miss events
- Q1.(b) Give equations, graph and effects for [09]
- i. Image negation
 - ii. Power law transformation
 - iii. Gamma Transformation
- Q2.(a) Explain image smoothing. Write effects and convolution masks for [08]
following filters:
- i. Mean
 - ii. Weighted mean
 - iii. Median
 - iv. Max
 - v. Min
- Q2(b) How bitplane slicing reduces image size? What is difference between [08]
slicing of image on basis of index and on basis of intensity

OR

Q2. What are types of edges. Write effects and convolution masks for following filters: [16]

- i. Robert
- ii. Prewitt
- iii. Sobel
- iv. Canny

Q3. Define segmentation. Explain with examples: [16]

- i. Simple adaptive and Otsu thresholding
- ii. K-means clustering
- iii. Segmentation using ANN

OR

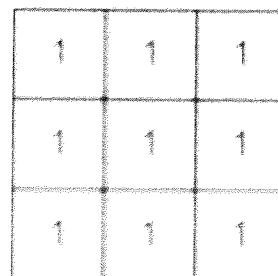
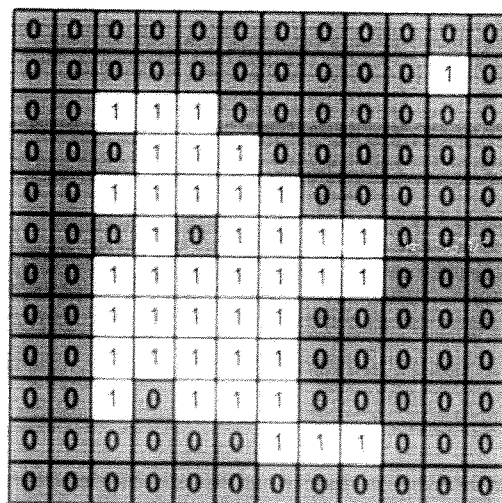
Q3. What are local features? Give advantage of local features over global features. List some important local feature extraction algorithms. What are feature detectors and feature descriptors? [16]

SECTION II

Q4. Define morphological image processing. Explain using the following: [18]

- i. Structuring element
- ii. Types with examples of structuring elements
- iii. Hits and fits

Give difference between dilation and erosion . What effects do they have on image? For the given image and structuring element S, find the erosion and dilation image



Q5. What are different types of arithmetic and logical operations that can be performed on images. Give applications. Explain histogram of image. What is its interpretation. How does histogram equalisation enhance an image? [16]

OR

Q5. Explain computer vision system and list down applications of vision in different bands [16]

Q6. Explain image classification using machine learning with example [16]

OR

Q6. Explain image transformations. Write the 3-D matrices and effects of rotation, translation, scaling and perspective transformation. [16]

