CBCS SCHEME

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20ECS/ELD/EIE321

Third Semester M.Tech. Degree Examination, Jan./Feb. 2023
Advances in Image Processing

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Explain Image Digitization in detail. **(08 Marks)**

b. Explain the following:
(i) Euclidean distance
(ii) City block distance
(iii) Chessboard distance **(06 Marks)**

c. Explain the visual perception of the image in detail. **(06 Marks)**

OR

2 a. Explain different color spaces used in color image processing. **(06 Marks)**

b. With block diagram, explain the difference between analog and digital cameras. **(08 Marks)**

c. Explain the following: (i) Histograms (ii) Image Quality (iii) Entropy **(06 Marks)**

Module-2

3 a. What is pixel brightness transformation? With neat sketch, explain gray scale transformation. **(06 Marks)**

b. What is image smoothing? Explain different image smoothing techniques. **(08 Marks)**

c. Explain the canny edge detection techniques used in image processing. **(06 Marks)**

OR

4 a. What is geometric transformation? Explain pixel coordinate transformation. **(07 Marks)**

b. Explain the following operators used in edge detection:
(i) Laplace operator (ii) Prewitt operator (iii) Sobel operator **(06 Marks)**

c. With neat sketch, explain different spatial frequency filters. **(07 Marks)**

Module-3

5 a. Explain various thresholding techniques used in image processing. **(10 Marks)**

b. Explain border tracing in detail. **(10 Marks)**

OR

6 a. With an example, explain hough transformation in detail. **(08 Marks)**

b. What is region based segmentation? Explain splitting and merging in region based segmentation. **(06 Marks)**

c. Explain watershed segmentation. **(06 Marks)**

Module-4

7 a. With a block diagram, explain different description methods in image analysis and image understanding. **(08 Marks)**

b. Explain in detail about region identification. **(06 Marks)**

c. Write a brief note on convex hull. **(06 Marks)**

OR

8	a.	Explain various descriptors used in simple geometric border representation.	(07 Marks)
	b.	Explain B spline representation.	(07 Marks)
	c.	Explain Fourier transforms of boundaries refers to image processing.	(06 Marks)

Module-5

9	a.	What is morphology? Explain in detail about four morphological principles.	(08 Marks)
	b.	Explain the following: (i) Dilation and erosion (ii) Opening and closing	(08 Marks)
	c.	Explain hit-or-miss transformation.	(04 Marks)

OR

10	a.	Explain thinning, thickening and homotopic skeleton.	(07 Marks)
	b.	Explain morphological reconstruction.	(06 Marks)
	c.	Explain in briefly about binary morphological segmentation.	(07 Marks)

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