Dr. A.P.J. Abdul Kalam Technical University (AKTU) · B.Tech Theory Examination

Image Processing

KEC072 · 2019

Time: 3 Hours **Max. Marks: 70**

Attempt all questions.
All questions carry equal marks.

SECTION A

1(a)	Define the term 'Image Sampling' and 'Quantization'.	2	U1
1(b)	What is the importance of Histogram Equalization?	2	U2
1(c)	Differentiate between Image Enhancement and Image Restoration.	2	U3
1(d)	Define the term 'Dilation' and 'Erosion' in morphological image processing.	2	U4
1(e)	What is the need for image compression?	2	U5
1(f)	Explain the concept of 'Region Growing' in image segmentation.	2	U4
1(g)	What is the role of 'Homomorphic filtering' in image processing?	2	U2

SECTION B

2(a)	Explain the fundamental steps in Digital Image Processing with the help of a block diagram.	7	U1
2(b)	Discuss the various noise models present in an image. How can these be removed using spatial filtering?	7	U3
2(c)	Describe the Huffman coding algorithm for image compression with an example.	7	U5

SECTION C

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3	Explain the elements of visual perception. Also, discuss the structure of the human eye and its role in image formation.	7	U1
4	What is spatial filtering? Explain the difference between smoothing and sharpening spatial filters with suitable examples.	7	U2
5	Discuss the degradation model for image restoration. Explain the process of image restoration using inverse filtering.	7	U3
6	Explain the Hough transform for edge linking. How can it be used to detect lines in an image?	7	U4
7	Discuss the JPEG image compression standard. Explain the various steps involved in the JPEG compression process.	7	U5

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