Reg. No. : | | | | | | | | | | |

Question Paper Code: 39410

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Elective

Electronics and Communication Engineering

01UEC910 - DIGITAL IMAGE PROCESSING

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Define Mach band effect.
2. Cite 2D-DCT pair.
3. Define Homomorphic filtering.
4. What would be the effect of repeated application of histogram equalization to an image?
5. Give the requirements for image restoration.
6. List the short comings of histogram equalization.
7. How are edges combined in image segmentation?
8. State the condition to be met by the partitions in region based segmentation.
9. Distinguish lossy and lossless compression.
10. Give any two examples for coding.

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Describe the function of elements of digital image processing system. (8)

(ii) In the given image; white pixel represent binary 1 and black pixel represent binary 0. Compute the logical operations AND, OR, NAND and XOR between the given images. (8)

Or

(b) (i) Discuss about the image sampling and quantization. (8)

(ii) Describe the elements of visual perception. (8)

12. (a) Explain the smoothing and sharpening-spatial filters. (16)

Or

(b) (i) Derive the 4x4 Haar matrix. List the properties of Haar transform. (8)

(ii) Explain about Ridgelet transform. (8)

13. (a) With a mathematical model, describe constrained and unconstrained restoration. (16)

Or

(b) (i) Describe the use of geometric transformation for image restoration. (8)

(ii) Explain the process of image restoration using frequency domain notch filter. (8)

14. (a) Discuss about region based image segmentation techniques and Compare threshold based region segmentation techniques. (16)

Or

(b) (i) Explain the segmentation techniques that are based on finding the regions directly. (10)

(ii) Discuss the selection criteria for thresholding. (6)

15. (a) (i) Define and explain the various image representation approaches. (10)

(ii) Discuss the morphological operators with their applications. (6)

Or

(b) (i) Explain any two techniques of region representation. (10)

(ii) Describe the techniques used for boundary description. (6)