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

Question Paper Code: 31483

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Elective

Electronics and Communication Engineering

01UEC910 - DIGITAL IMAGE PROCESSING

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

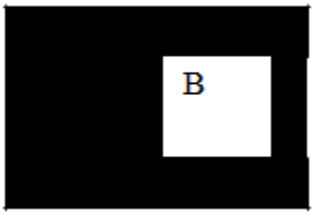
PART A - (10 x 2 = 20 Marks)

1. Define mach band effect.
2. The observer is looking at tree 15m height at a distance of 100m. Find the size of the retinal image.
3. Define Homomorphic filtering.
4. Represent 2D-DCT pair.
5. Compare linear and nonlinear filter.
6. List the shortcomings of histogram equalization.
7. Why edge detection is most common approach for discontinuities?
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) (i) Define 2D DFT pair and discuss any three properties of it. (8)

(ii) Determine Walsh basis for the fourth order system. How walsh transform is more efficient than the Fourier transform. (8)

Or

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

(ii) Explain about Ridgelet transform. (8)

13. (a) (i) Give an algorithm for obtaining the average of four images of same size and explain it. (8)

(ii) Describe the important noise probability density functions. (8)

Or

(b) Explain mean and order statistics. (16)

14. (a) (i) How do you link edge pixels through global processing? (8)

(ii) How do you perform edge detection? Give suitable algorithm and discuss how the edge points are linked? (8)

Or

(b) (i) Discuss the concept of chain codes. (8)

(ii) Discuss the concept of Skeleton. (8)

15. (a) Explain about the video compression standard. (16)

Or

(b) (i) Demonstrate image compression using Huffman coding. (8)

(ii) Describe Bit plane coding. (8)

———————