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**Question Paper Code: 39410**

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2022

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. Compare sampling and quantization.
2. Write the advantages of transforms.
3. What is the effect of size and shape of the mask on the filtering process?
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. Mention the advantages of moments.
10. Specify the applications of texture analysis?

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Define 2D DFT pair and discuss any three properties of it. (8)  
(ii) Determine Walsh basics for the fourth order system and explain how Walsh transform is advantages than fourier transform. (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) (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) How do you link pixels through global processing ? How do you perform edge detection? Give suitable algorithm and discuss how the edge points are linked. (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) Formulate the Chain codes & Skeletons. (16)

Or

- (b) (i) Explain any two techniques of region representation. (10)  
(ii) Describe the techniques used for boundary description. (6)
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