C

Reg. No. :

Question Paper Code: 59409

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

Elective

Electronics and Communication Engineering

15UEC909– DIGITAL IMAGE PROCESSING

(Regulation 2015)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. A continuous image is digitized at___points.   CO1- R

    (a) Random   (b) Vertex   (c) Contour   (d) Sampling

2. Which of the following low pass filters is/are covers the range of very sharp   CO2- R
    filter function?

    (a) Ideal low pass filters   (b) Butterworth low pass filter

    (c) Gaussian low pass filter   (d) All of the above

3. Purpose of restoration is to gain   CO2- R

    (a) Degraded image   (b) Original image   (c) Pixels   (d) Coordinates

4. Opening and closing are each others   CO3- R

    (a) Neighbours   (b) Duals   (c) Centers   (d) Corners

5. Erosion followed by dilation is   CO3- R

    (a) Opening   (b) Closing   (c) Blurring   (d) Translation

PART – B (5 x 3= 15 Marks)

6. Differentiate photopic and scotopic vision.   CO1- U

7. Compare Spatial domain and Frequency domain in Image Enhancement.   CO2- U

8. List the steps involved in frequency domain filtering.   CO2- U

9. How the derivatives are obtained in edge detection during formulation.   CO3- U

10. Differentiate structural and spectral approach. CO3- U

<div align="center">PART – C (5 x 16= 80 Marks)</div>

11. (a) Explain the properties of 2D Fourier Transform. CO1- U (16)

<div align="center">Or</div>

   (b) Describe the elements of visual perception. CO1- U (16)

12. (a) Explain the types of gray level transformation used for image enhancement. CO2- U (16)

<div align="center">Or</div>

   (b) Explain the algebra approach in image restoration. CO2 -U (16)

13. (a) Illustrate the steps involved in histogram equalization. CO2- U (16)

$$I = \begin{bmatrix} 4 & 4 & 4 & 4 & 4 \\ 3 & 4 & 5 & 4 & 3 \\ 3 & 5 & 5 & 5 & 3 \\ 3 & 4 & 5 & 4 & 3 \\ 4 & 4 & 4 & 4 & 4 \end{bmatrix}$$

<div align="center">Or</div>

   (b) Explain model of image degradation/restoration process with a block diagram. CO2- U (16)

14. (a) Discuss about the importance of Hit-or-Miss morphological transformation operation on a digital binary image with examples. CO3- U (16)

<div align="center">Or</div>

   (b) Explain the various methods of thresholding in detail. CO3- U (16)

15. (a) Discuss about region based image segmentation techniques. Compare with threshold based segmentation techniques. CO3- U (16)

<div align="center">Or</div>

   (b) Explain image segmentation in detail. CO3- U (16)

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