C **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 59409

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

Elective

Electronics and Communication Engineering

15UEC909 – DIGITAL IMAGE PROCESSING

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5x 1 = 5Marks

1. To convert a continuous sensed data into Digital form, which of the following is required? CO1 -R

   (a) Sampling (b) Quantization (c) Both a and b (d)Neither a nor b

2. Median filter belongs to which category of filters? CO2 -R

   (a) Linear spatial filter (b) Frequency domain filter

   (c) Order static filter (d) Sharpening filter

3. Filters are used to_____ CO3 -R

   (a) acquire the image (b) partition the image

   (c) remove the noise (d) all of the mentioned

4. On which of the following operation of an image, the topology of the region changes? CO4 -R

   (a) Stretching (b) Rotation (c) Folding (d) Distance measure

5. External characteristics of an image focus on _____ CO5 -R

   (a) shape (b) colour (c) textures (d) all of the mentioned

PART – B (5 x 3= 15Marks)

6. Write short notes on neighbors of a pixels. CO1- R

7. Write down the average filtering mask.. CO2 -R

8. Draw the model of image degradation process. CO3 -R

9. Specify the steps involved in splitting &merging. CO4 -R

10. Evaluate the advantages and disadvantages of using more than one seed in a region growing technique. CO5 -R

PART – C (5 x 16= 80Marks)

11. (a) Explain various functional block of digital Image processing. CO1- App (16)

Or

(b) Illustrate the principle of operation of human eye and summarize about various chromic models. CO1 -U (16)

12. (a) Illustratre the steps involved in histogram equalization. CO2 -App (16)

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

Or

(b) Explain image enhancement in the frequency domain CO2 -Ana (16)
(i)Smoothing filters.
(ii)Sharpening filters

13. (a) Explain model of image degradation/restoration process with a block diagram. CO3 -App (16)

Or

(b) Explain in detail about Homomorphic filtering. CO3- Ana (16)

14. (a) Explain region splitting and merging segmentation technique with an example. CO4 -U (16)

Or

(b) Discuss about region based image segmentation techniques. Compare with threshold based segmentation techniques. CO4- Ana (16)

15. (a) Explain the dilation and erosion in morphological image processing CO5 -U (16)

Or

(b) Discuss about the importance of Hit-or-Miss morphological transformation operation on a digital binary image with examples. CO5 -U (16)