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

Question Paper Code: 59409

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

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. For coordinates p(2,3)the 4 neighbors of pixel p are CO1 -R

   (a) (3,3)(2,3)(1,3)(1,3) (b) (3,3)(2,3)(1,1)(2,2)

   (c) (3,3)(2,4)(1,3)(2,2) (d) (3,3)(2,4)(1,3)(2,1

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. How many bit RGB color image is represented by full-color image? CO3 -R

   (a) 32-bit (b) 24-bit (c) 16-bit (d) 8-bit

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. When the threshold value T depends only on the intensity value [f(x, y)] then threshold technique is called _____threshold CO5 -R

   (a) Local (b) Global (c) Adaptive (d) Optimum

PART – B (5 x 3= 15Marks)

6. What is the total number of bits to store a 512×512 image with 256 gray levels? CO1- R

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

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

9. Write Sobel horizontal and vertical edge detection masks. 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 the principle of sampling and quantization.Discuss the effect of increasing the (i) Sampling frequency (ii) Quantization level. CO1- App (16)

Or

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

12. (a) Apply 3×3 averaging filter for and median filter the following image with zero padding. CO2 -App (16)

$$A=\begin{vmatrix} 7 & 9 & 11 \\ 10 & 50 & 8 \\ 9 & 5 & 6 \end{vmatrix}$$

Or

(b) Explain the image restoration technique to remove the blur caused by Uniform linear motion. CO2 -Ana (16)

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

Or

(b) Design an Least Mean Square filter with Υ=1(Weiner filter)and also derive its equation CO3- Ana (16)

14. (a) Describe in detail about various thresholding techniques CO4 -U (16)

Or

(b) Explain region splitting and merging segmentation technique with an example. CO4- Ana (16)

15. (a) Explain the basic operations of 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)