

Code: EC7T2

**IV B.Tech - I Semester – Regular/Supplementary Examinations
October - 2019**

**DIGITAL IMAGE PROCESSING
(ELECTRONICS & COMMUNICATION ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11 x 2 = 22 M

1.

- a) Define the terms: i) Image ii) Digital Image.
- b) Specify different neighbors of a pixel.
- c) Outline short notes on log transformation.
- d) Specify the advantages of filtering in frequency domain.
- e) Write short notes on spatial redundancy.
- f) Explain about fidelity criteria.
- g) What is meant by image segmentation? Write its use in image processing.
- h) What is global and local threshold?
- i) Define brightness, hue and saturation.
- j) State the advantage of color in image processing applications.
- k) Give short notes on morphological gradient.

PART – B

Answer any **THREE** questions. All questions carry equal marks.

3 x 16 = 48 M

2. a) In a digital image of size 600X 450, if bits of memory is allocated per sample,
- i) How many quantization levels are possible?
 - ii) What is the size of memory in kB? 6 M
- b) Construct Haar transformation matrix for $N = 8$. 10 M
3. a) Explain the concept of Unsharp masking and Highboost filtering. 8 M
- b) Contrast image smoothing using ideal lowpass filters and Butterworth lowpass filters. 8 M
4. a) Define compression and explain the general compression system model. 8 M
- b) With an example, explain about arithmetic coding. 8 M
5. a) Discuss about edge linking procedures. 8 M
- b) Elaborate the significance of thresholding in image segmentation. 8 M

6. a) Explain the procedure of converting colors from HSI to RGB. 8 M

b) Illustrate the following morphological algorithms 8 M
i) Thinning ii) Thickening