

Code: EC7T2

**IV B.Tech - I Semester –Regular / Supplementary Examinations
JANUARY - 2022**

**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 Digital Image.
- b) Define sampling and Quantization process.
- c) Explain the operation of Gray level Slicing.
- d) Define Histogram.
- e) What are the steps involved in Frequency Domain Filtering?
- f) Explain about the lossless compression.
- g) Write about inter pixel Redundancy.
- h) Explain image segmentation.
- i) Write about point Detection in segmentation.
- j) What are different Types of Color Models?
- k) Define Erosion.

PART – B

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

$$3 \times 16 = 48 \text{ M}$$

2. a) Discuss different elements used in digital image processing system. 8 M
- b) Find the kernel coefficients of Walsh transform for $N=4$. 8 M
3. a) Explain the operation of Histogram Equalization. 8 M
- b) Discuss Image smoothing with the following
(i) Low pass spatial filtering (ii) Median filtering. 8 M
4. a) Discuss the functioning of source Encoder and Decoder in image compression with the help of a block diagram. 8 M
- b) Explain the Redundancies among the pixels in the images. 8 M
5. a) How is edge detection performed? Write a suitable algorithm for edge linking. 8 M

- b) What is Thresholding? Explain about Global Thresholding. 8 M
6. a) Explain RGB color model and convert RGB image into HSI image. 8 M
- b) Explain the following morphological Algorithms
i) Boundary extraction ii) Region filling 8 M