Code: EC7T2

**IV B.Tech - I Semester – Regular/Supplementary Examinations**
**March - 2021**

# 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) Write about concept of gray levels.
   b) Define sampling and quantization.
   c) Give any two properties of discrete cosine transform.
   d) Why do we use histograms in image processing?
   e) Why Butterworth filters are widely used?
   f) What is image compression?
   g) What is LZW coding? Write application of LZW coding.
   h) What are the three types of discontinuities in digital image?
   i) Write the applications of image thresholding.
   j) Differentiate RGB and CMY color models.
   k) What do you mean by boundary detection and give examples?

# PART – B

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

3 x 16 = 48 M

2. a) Discuss about fundamental steps involved in digital image processing with examples.                                     8 M

   b) Define image transforms. Explain different types of image transforms.                                                            8 M

3. a) Explain about smoothing linear filters and its applications.                                                                            8 M

   b) What is frequency domain filtering? Discuss any two methods involved in frequency domain filtering.        8 M

4. a) Describe various image compression models. Discuss in detail about the source encoders and decoders.          8 M

   b) Discuss in detail about the lossy compression and lossy predictive coding with examples.                                  8 M

5. a) Define image segmentation. Discuss edge linking and boundary detection via local processing.                        8 M

   b) What is thresholding?  Explain any two types of thresholding in image processing.                                          8 M

6. a) Discuss the two types of colour image processing with advantages and disadvantages. 8 M

b) Write a brief note on i) Erosion ii) Thinning and thickening. 8 M