PAPER ID-310276

Roll No: | | | | | | | | | | | | |

B TECH
(SEM-VII) THEORY EXAMINATION 2020-21
DIGITAL IMAGE PROCESSING

Time: 3 Hours *Total Marks: 70*

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. **Attempt *all* questions in brief.** **2 x 7 = 14**

a.	Define image with spatial coordinates.
b.	What is Haar transform?
c.	Explain Digital Halftone Process with respect of DIP.
d.	Enlist the various difference between enhancement & restoration.
e.	Write down the type of image degradation?
f.	What are the differences between lossless and lossy compression algorithm?
g.	What is image segmentation?

SECTION B

2. **Attempt any *three* of the following:** **7 x 3 = 21**

a.	Explain sampling and quantization. What is the difference between uniform and nonuniform sampling and quantization?
b.	What is the Need for image transforms? Write down the comparison between SVD and KL transforms.
c.	What are the different ways to estimate the degradation function? Explain.
d.	Explain Image Compression model in detail with diagram.
e.	Explain rescaling and resampling. Explain Hough Transforms with suitable diagram.

SECTION C

3. **Attempt any *one* part of the following:** **7 x 1 = 7**

(a)	Briefly explain the phenomenon of digital image representation with suitable diagram.
(b)	What are the various fundamental steps in digital image processing? Explain

4. **Attempt any *one* part of the following:** **7 x 1 = 7**

(a)	Why Hadamard Transform is most suitable for digital image processing? Discuss Hadamard Transform with the help mathematical expression.
(b)	What are the needs of Image Enhancement Techniques? discuss the Image? sharpening in frequency domain.

5. **Attempt any *one* part of the following:** **7 x 1 = 7**

(a)	Discuss image restoration techniques. Explain in detail the image restoration in presence of noise only.
(b)	Explain periodic noise reduction using band pass filter.

6. **Attempt any *one* part of the following:** **7 x 1 = 7**

(a)	Describe Inter-frame coding and predictive compression.
(b)	Explain the process of JPEG compression with block diagram.

7. **Attempt any *one* part of the following:** **7 x 1 = 7**

(a)	Define edge detection segmentation technique and edge linking. Also write the difference between them.
(b)	How can you control over segmentation problem? Explain shape detection in detail.