Sub Code: NEC032

Paper Id: 130720 Roll No:

BTECH
(SEM VII) THEORY EXAMINATION 2018-19
DIGITAL IMAGE PROCESSING

Time: 3 Hours *Total Marks: 100*

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

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

a.	Define Image?
b.	What do you meant by Gray level?
c.	Why edge detection is most common approach for detecting discontinuities?
d.	Write down the type of image degradation?
e.	What is segmentation.
f.	What is Data Compression?
g.	Define Haar transform.
h.	Define resolutions?
i.	Write the properties of Hadamard transform?
j.	Define Image?

SECTION B

2. Attempt any *three* of the following: 10x3=30

a.	What are the various fundamental steps in digital image processing? Explain.
b.	Why Hadamard Transform is most suitable for digital image processing? Discuss Hadamard transform with the help of mathematical expression.
c.	Define and differentiate the inverse and wiener filter. Discuss the use of wiener filter in image processing what do you mean by speckle? Describe a method for speckle reduction.
d.	Explain image compression model in detail.
e.	Write short note on Image Restoration?

SECTION C

3. Attempt any *one* part of the following: 10x1=10

a.	Explain Image Enhancement Techniques and discuss the importance of spatial operations.
b.	Explain edge linking using Hough transform.

4. Attempt any *one* part of the following: 10x1=10

a.	Explain sampling and quantization. What is the difference between uniform and nonuniform sampling and quantization?
b.	What are the different ways to estimate the degradation function? Explain.

5. Attempt any *one* part of the following: 10x1=10

a.	Describe Physical Aspect of Image Acquisition. Also explain biological aspect of image acquisition.
b.	Discuss image restoration techniques. Explain in detail the image restoration in Presence of noise only.

6. Attempt any *one* part of the following: 10x1=10

a.	What do you mean by Gaussian noise and why is an averaging filter used to eliminate it?
b.	Describe Inter-frame coding and predictive compression

7. Attempt any *one* part of the following: 10x1=10

a.	How can you control over segmentation problem? Explain it.
b.	Explain in detail the image compression algorithms and its types.