Printed Pages:2 **Sub Code: EIT081**

Paper Id: **113204** **Roll No.** | | | | | | | | | | |

B.TECH
(SEM VIII) 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. Explain sampling and quantization.

b. Explain spatial domain processing.
c. What do you mean by image processing?
d. Explain the steps in image processing with the help of block diagram.

e. Give various grey level slicing techniques.

f. What is contrast stretching?

g. Suppose that A,B,C are three points prove that:

(((A.B)o C).B)o C= (A.B) o C

h. Explain the thresholding method of segmentation.

i. What are blurring and ringing effects?

j. How ringing effects can they be avoided?

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

a. Explain the steps involved in sampling and quantization of images. How many minutes are required for a 512×512 image with 256 grey levels at 300 baud rate for transmission? The transmission is accomplished using packets consisting of a start bit, a byte(8 bits) of information and a stop bit.(Baud rate means number of bits per second) .

b. Explain the action of the following spatial mask on an image.

0	-1	0
-1	4	-1
0	-1	0

c. Describe any one image sharping method in detail with example.

d. What do you mean by Noise Models in image restoration? Describe WIENER Filter and Inverse Filtering.

e. Perform linear stretching on the following data

Grey level	0	1	2	3	4	5	6	7
No. Of pixels	0	0	100	160	150	120	110	0

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

(a) What do you mean by morphology? Discuss any one morphological algorithm with suitable example.

(b) What do you mean by thinning and thickening of an image? Discuss the method for thinning of an image.

4. Attempt any *one* part of the following: 10 x 1 = 10

(a) Suppose two discrete one dimensional functions are represented by the sequences:
f=[5 7 11 8 2 6 8 9 7 4 3] h=[1 2 1] compute f + h, f O h, f o h, f .

(b) Explain the Watershed Segmentation algorithm in detail with example.

5. Attempt any *one* part of the following: 10 x 1 = 10

(a) What do you mean by Feature thresholding in pixel based approach?

(b) Describe any one depth recover algorithm in detail.

6. Attempt any *one* part of the following: 10 x 1 = 10

(a) Explain different visions of human eye. And how an image is formed in the human eye?

(b) Compare the given basic frequency domain filters:

(i) Ideal low pass (ii) Butterworth low pass (iii) Gaussian low pass

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) What do you mean by power law transformation? Explain in detail.

(b) What is Hit-Miss Transform and why they are used in digital image processing? Explain in detail..