Printed Pages : 1 **Roll No.** | | | | | | | | | | | **NCS801**

B. TECH.

THEORY EXAMINATION (SEM–VIII) 2016-17

DIGITAL IMAGE PROCESSING

Time : 3 Hours ***Max. Marks : 100***

Note : *Be precise in your answer. In case of numerical problem assume data wherever not provided.*

SECTION – A

1. Attempt all parts of the following questions: 10 x 2 = 20

(a) Define Image. What is Dynamic range?

(b) What is meant by illumination and reflectance?

(c) Find the number of bits required to store a 256 X 256 image with 32 gray levels?

(d) Explain the type of connectivity.

(e) What is contrast stretching?

(f) What do you mean by dilation and erosion?

(g) Explain Noise model.

(h) List edge detection operators.

(i) Explain Affine transform.

(j) Explain the concept of thresholding.

SECTION – B

2. Attempt any five parts of the following questions: 5 x 10 = 50

(a) What is digital image processing? Draw a block diagram. And discuss some of its major applications.

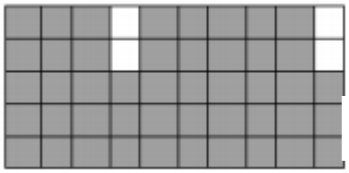
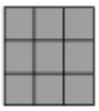
(b) **Write a short note on**

(i) Sampling and Quantization (ii) Homomorphic filtering

(c) Explain Histogram equalization. And equalize the given histogram.

Grey level								
Number of Pixel	790	1023	850	656	329	245	122	81

(d) Define boundary extraction? Perform boundary extraction on image A with the help of structuring element B

A =  B = 

(e) What is Noise? Define any two noise models in detail.

(f) What is Geometric transformation? Also discuss Euclidean Transformation.

(g) How dilation and erosion is used in Morphological operations. How it is used in opening and closing operations.

(h) **Write a short note on**

(i) Image Segmentation (ii) Sampling and quantization

(ii) Illumination and reflectance

SECTION – C

Attempt any two parts of the following questions: 2 x 15 = 30

3 What are the different stages of digital image processing? Explain each stage in detail.

4 Explain the following in details

(i) Stereo Imaging (ii) Region filling (iii) Convex Hull

5 What is image restoration? Draw and explain the basic block diagram of the restoration process. Give two areas where restoration process can be applied?