Printed Pages : 1 **Roll No.** | | | | | | | | | | | **NEN043**

B.TECH.

THEORY EXAMINATION (SEM–VIII) 2016-17

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. Explain the following: **10 x 2 = 20**

(a) Explain sampling and quantization.

(b) Explain the 3D Image processing

(c) Give various grey level slicing techniques.

(d) Explain smoothing and sharpening

(e) How biometric features can be useful for recognition?

(f) Explain topological and texture analysis in brief.

(g) What do you mean by signature verification?

(h) What do you mean by Mach Bands?

(i) What is Isomorphism?

(j) Define Fuzzy Logic.

SECTION – B

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

(a) Derive the mathematical expression for DCT and enumerate the properties of DCT.

(b) Draw the block diagram of signature verification and explain its working.

(c) Draw the block diagram of a digital image restoration system and explain it. Classify the image restoration system and explain Wiener filter.

(d) Discuss the match based segmentation in detail. What is supervised and unsupervised evaluation? Differentiate with some examples.

(e) Discuss fourier wavelet principal components, analysis in image analysis in detail.

(f) Show that a two dimensional Gaussian is separable, while the Laplacian of a Gaussian operator is not separable.

(g) **Write short note on:**

(a) Finger print classification.

(b) Text recognition

(h) What is meant by image quantizer ? What are the advantages of image quantizer?

SECTION – C

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

3 (i) Differentiate between winer and inverse filteration

(ii) Differentiate between linear and bicubic interpolation

4 What is histogram? For what purpose is it used? Explain histogram specification with example. Discuss image compression techniques.

5 What do you mean by Nyquist rate, alliasing and fold over frequency as related to sampling of images ? How the image is reconstructed from its samples ?