

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 filtration
 - (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 ?