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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:

- (a) Define sampling process.
- (b) What is bit plane silencing?
- (c) Name any two noise model
- (d) What is hue and saturation?
- (e) What is meant by pixel?
- (f) Specify the elements of DIP system.
- (g) What do you mean by mach bands?
- (h) What is kalman theorem?
- (i) How cones and rods are distributed in retina?
- (j) What is meant by path?

SECTION – B

2. Attempt any five parts of the following questions:

- (a) Justify that image is a stochastic process.
- (b) Explain stereo imaging elements of visual perception
- (c) Classify different types of image quantizer .What do you mean by image quantizer ? What are the advantages of image quantizer ?. Discuss uniform optimal quantizer.
- (d) Find the expression for DFT of an NxN image u(m,n) and the properties of this transform.
- (e) Draw the block diagram of a digital image restoration system and explain it. Classify the image restoration system and explain Wener filter.
- (f) What is image segmentation? Why it is required? Explain region growing technique.
- (g) How pattern recognition method is done for rapid object recognition? Explain in detail.
- (h) Draw the block diagram of signature verification and explain its working.

SECTION – C

Attempt any two parts of the following questions:

- **3** Explain Hough transform, topological and texture analysis.
- 4 Write short note on :
 - (i) Pseudo color enhancement.
 - (ii) Finger print classification.
 - (iii) Run length coding
- 5 Define the moment for a two dimensional signal f(x, y) > 0. How different order of moments is useful in image recognition? What are the different moment invariant related to image recognition?

 $10 \ge 2 = 20$

5 x 10 = 50

 $2 \ge 15 = 30$