

**R09**

**Code No: D2508**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**M.Tech II - Semester Examinations, March/April 2011**

**IMAGE PROCESSING AND PATTERN RECOGNITION**

**(SOFTWARE ENGINEERING)**

**Time: 3hours**

**Max. Marks: 60**

**Answer any five questions  
All questions carry equal marks**

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1. What is meant by Image Enhancement? How it is achieved by Histogram Processing? [12]
2. List the areas in which pattern recognition concept can be applied and explain the techniques applied for two applications clearly. [12]
3. a) Explain in detail the lossy predictive coding and loss less predictive coding techniques with block diagrams.  
b) Explain about Huffman coding with suitable with an example. [12]
4. Distinguish between supervised and unsupervised learning methods. [12]
5. a) Distinguish between Dilation and Erosion.  
b) Explain the Hit or Miss transforms with suitable examples. [12]
6. What are the Pattern Recognition approaches? Give an example for BAYESIAN decision making refers to multi feature classification? [12]
7. Determining the optimal decision boundary between two bivariate normal classes? Consider the two classes are  $G$  and  $\bar{G}$  are both bivariate normal with prior probabilities are  $P(G)=0.8$  and  $P(\bar{G})=0.2$ . The parameters of the conditional density for class  $G$  are  $\mu_x = 26, \sigma_x = 2, \mu_y = 85, \sigma_y = 5, \rho_{xy} = 0.6$ , and the parameters for class  $\bar{G}$  are  $\mu_x = 22, \sigma_x = 3, \mu_y = 70, \sigma_y = 8, \rho_{xy} = 0.5$ . [12]
8. Write short notes on the following:
  - a) Regional descriptors in Image Processing.
  - b) Morphological Segmentation.
  - c) K-means algorithm in pattern classification. [12]

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