

III B.Tech II Semester Supplementary Examinations, April/May 2005
IMAGE PROCESSING
(Bio-Medical Engineering)

Time: 3 hours

Max Marks: 70

Answer any FIVE Questions
 All Questions carry equal marks

1. Explain in detail about the fundamental problems in the design of pattern recognition system. Also, discuss the methods to overcome them.
2. Write a short note on the following:
 - (a) Classification principle
 - (b) Cluster analysis
3. (a) The solution equation of the proof of convergence corresponds to reward-punishment algorithm is given below:

$$\frac{[\omega^1(1)\omega^* + K_m T]^2}{\Pi\omega^* \Pi^2} = \Pi\omega(1) \Pi^2 + (2T + Q) K_m$$
 Describe different terms involved in the equation.
 - (b) Explain how the stochastic approaches are different from deterministic approaches.
4. (a) Give the PDL grammar for the production of the following structure as shown in the figure 1

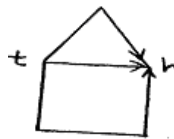


Figure 1:

- (b) The primitives for the submedian and telocentric chromosomes are given as below figure2

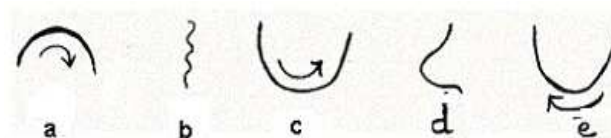


Figure 2:

- (c) Give the terminal sentences for the generation of chromosomes given below figure 3

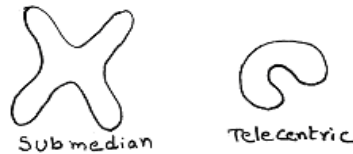


Figure 3:

5. Write short notes on:
- (a) Pixel neighbors.
 - (b) Pixel connectivity.
 - (c) Distance measure.
 - (d) Equivalence of pixels.
6. (a) Write a note on the following:
- i. image subtraction
 - ii. image averaging
- (b) Show that a high pass filtered image can be obtained in the frequency domain as High pass = original - low pass (assume 3x3 filters)
7. (a) Write short notes on
- i. Inter pixel redundancy.
 - ii. Psychovisual Redundancy
- (b) What do you mean by run length coding? Explain with an example.
8. (a) What is meant by image segmentation? Mention the applications of image segmentation.
- (b) Explain about detection of discontinuities.
