Code No: NR410507 **NR**

IV B.Tech I Semester Supplementary Examinations, April/May 2005
DIGITAL SPEECH & IMAGE PROCESSING
(Common to Computer Science & Engineering and Electronics & Computer Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. With a brief note on the importance of YIQ and HSI colour models, explain the conversion of RGB images to YIQ and HSI colour images.
2. Given an image of size 3× 3 as shown below:

$$\begin{bmatrix} 0 & 0 & 2 \\ 5 & 1 & 2 \\ 0 & 3 & 4 \end{bmatrix}$$

   (a) What is transformation function of the histogram equalization.
   (b) What is the resultant output image after applying histogram equalization.
   (c) Draw the histogram of the input image and the image after applying histogram equalization.

3. Discuss the role of different convolution windows (filters) in the image enhancement.
4. Explain various detection of discontinuity methods in detail with suitable examples.
5. (a) List and explain various operators suitable for detection of diagonal edges.
   (b) Briefly explain how the crack edge relaxation is implemented.
6. Explain the methodology adopted to extend the morphology operations to gray scale images.
7. (a) With a neat block diagram, describe the image compression system model
   (b) What do you mean by mapper in source encoder?
   (c) Compare the statistical Compression and spatial Compression.
8. (a) On what basis the Huffman coding and arithmetic coding are useful for image compression? Explain.
   (b) What are the applications of lossy compression and lossless compression?
   (c) Differentiate the Huffman coding and truncated Huffman coding.

⋆ ⋆ ⋆ ⋆ ⋆