Code No: NR410507 **NR**

IV B.Tech I Semester Supplementary Examinations, November 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

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1. Explain how a RGB colour image is converted into different colour models using different conversion formula. [16]

2. (a) Prove or disprove that the histogram equalization is an invertible function.
   (b) What would be the effect on the histogram if we set to zero the higher order bits. [10+6]

3. (a) State and explain convolution theorem on images.
   (b) Discuss various factors that influence the brightness of a pixel in an image. [8+8]

4. The mean and standard deviation of the background pixels in the image shown are 110 and 15 respectively. The object pixels have mean and standard deviation values of 200 and 40 respectively. Give a thresholding solution for segmenting the objects of the image. [16]

5. (a) How the second derivative is computed using gray-values of an image.
   (b) What are the Sobel's operations for a 3× 3 region of an image. [10+6]

6. (a) Explain with necessary diagrams, the operation of closing
   (b) With examples, explain how morphology operations are used in region filling. [8+8]

7. (a) What is false contouring?
   (b) Differentiate
      i. compression and decompression
      ii. coding and decoding and
      iii. mapper and demapper
   (c) How the word distance is related with hamming code? [3+9+4]

8. How statistical coding is differentiated from spatial coding? Give one example for both the coding. Explain. [16]

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