Code No: NR410507 **NR**

IV B.Tech I Semester Supplementary Examinations, November 2006
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. (a) Explain in detail about different colour co-ordinate systems.
   (b) Describe the chromaticity diagram. [8+8]
2. (a) Explain the log and inverse log transformations. For what kind of image enhancement, these transformations are suitable.
   (b) Describe the general form of power-law transformation function. What are its application. [10+6]
3. Discuss the role of different convolution windows (filters) in the image enhancement. [16]
4. Explain various discontinuity detection methods in detail with suitable examples. [16]
5. A binary image contains straight lines oriented horizontally, vertically, at 45^0 and at -45^0. Give a set of 3X3 masks that can be used to detect 1-pixel-long breaks in these lines. [16]
6. (a) With necessary diagrams explain the operation of opening.
   (b) Let A and B are two sets in Z^2 . Show that $A \Theta B = \cap (A)_{-b}$ $b \in B$ [8+8]
7. (a) What do you mean by compression? Briefly explain its requirement.
   (b) Differentiate lossy compression and lossless compression. Mention their applications.
   (c) What do you mean by improved Gray Scale Quantization?
   (d) Explain the fidelity criteria in image compression. [3+5+4+4]
8. (a) Explain about
      i. slope overload
      ii. granular noise.
   (b) List out the advandages and drawbacks of different types of lossy compression techniques. [8+8]

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