Department of Mathematics
II Semester 2006-2006
MAL 715 Digital Image Processing
Major Test Weightage 35%
Date 8.5.07 Time 1 P.M. – 3 P.M.

Answer all questions.

Q1. Decode the message 0.233355 which is encoded using arithmetic coding given the coding model

Symbol	Probability
A	0.2
E	0.3
I	0.1
O	0.2
U	0.1
!	0.1

[5]

Q2. Propose a technique for detecting gaps of length ranging between 1 and L pixels in line segments of a binary image. [5]

Q3. What is convex hull of a set of pixels? Describe a morphological algorithm to find the convex hull of a given set A. [5]

Q4. Describe the Laplacian filtering technique. [5]

Q5. Describe development of the histogram specification method. Discuss the implementation issues. [5]

Q6. The basic approach used to approximate a discrete derivative involves taking difference of the form f(x+1,y)-f(x,y).
(a) Obtain the filter transform function, H(u,v), for performing the equivalent process in the frequency domain.
(b) Show that H (u, v) is a highpass filter. [3.5+1.5]

Q7. What is the characteristic of sharpening frequency domain filters? Discuss the Gaussian highpass filters and Butterworth Highpass Filters. [5]