CEG 4311 Lab3 Marking scheme
Fall 2007

Question 1		
(6 p)	• Generate two requested images • Display two images • Description and comments as manual requests	(2) (2) (2)
Question 2		
(8 p)	• Generate Y, I and Q components • Display Y, I and Q components • Down-sample I and Q • Display 4 reconstructed images • How much chrominance sub-sampling you think is acceptable? • comments on zone-plate as lab manual requests	(2) (1) (1) (2) (1) (1)
Question 3		
Part a **(5 p)**	• the whole procedure: block based DCT, prompt user for p, set to zero, IDCT • calculate PSNR for some proper p value • Display the reconstructed image • visually compare with the original	(2) (1) (1) (1)
Part b **(10 p)**	• do it for a range of values for p • Plot PSNR vs. p • Value of p for 30 dB • Display the 30 dB image • Value of p for just noticeable difference • Display the image • Comment on PSNR, p, Visual quality relationship	(2) (2) (1) (1) (1) (1) (2)

Question 4		
Part a (6 p)	• the whole procedure: block based DCT, prompt user for Delta, uniform quantization, IDCT • step size for barely noticeable difference • Display the image • step size for very noticeable difference • Display the image • calculate the percentage of zero coefficients in each case • compute PSNR in each case • visually compare each with the original	(1) (0.5) (0.5) (0.5) (0.5) (1) (1) (1)
Part b (6 p)	• similar thing except using jpeg quantization table • qp for barely noticeable difference • Display the image • qp for very noticeable difference • Display the image • calculate percentage of zero coefficients in each case • compute PSNR in each case • visually compare each with the original	(1) (0.5) (0.5) (0.5) (0.5) (1) (1) (1)
Question 5		
(9 p)	• repeat question 4 for a range of values for Delta and qp, similar PSNR range • Delta and qp for 30 dB • Display both images • Compare three 30 dB images including one from question 3 and comment on their relative subjective quality	(3) (2) (2) (2)

Question 6		
(+ 7.5 p)	• Use Matlab imwrite Quality parameter followed by imread • Plot PSNR vs. Quality • Plot Quality vs. qf of question 5, same range of PSNR values • Plot Quality vs. qf from their relationship and compare with your plot, two plots must align	(1.5) (1) (3) (2)
Total **(50 + 7.5 p)**		