Advanced Digital Image Processing  
(CE 40-823)  
Assignment No. 3  
Due time: 1386/3/12

1- solve the following problems from text book:  
• 5.3, 5.7, 5.11 (in part (a) you can use Matlab for calculations instead of mathematical formulas).  
• 7.3

2- a) Write the MATLAB code that examines the effect of approximating an image with a partial set of DCT coefficients. Use an 8*8 DCT, reconstruct the image with \( K < 64 \) coefficients, for \( K = 4, 8, 16, \) and 32. b) Repeat the above exercise with Hadamard transform and compare the results.

3) Develop code for question 7.1 (you can use any arbitrary scanned image).

4) a) Consider an ensemble of multi spectral satellite images. (An example is available in HW_3Images.rar). Develop code for extracting 3 principal component of these images and show them. b) Utilize the results of part (a) and produce a color image. Select your color system carefully and discuss about it.