

Exam.Code:0932
Sub. Code: 6921

1108
B.E. (Electronics and Communication Engineering)
Eighth Semester
Elective : II & III
EC-808: Digital Image Processing

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Part.

x-x-x

Q1	<p>a. What is orthogonal transform?</p> <p>b. Generate Haar basis for N=2.</p> <p>c. Compare the concept of bit plan slicing and Intensity level slicing?</p> <p>d. What is effect of insufficient sampling rate in image processing?</p> <p>e. What is the concept of High boost filter?</p> <p>f. What is difference between luminance and radiance?</p> <p>g. Define weber ratio and brightness adaptation.</p> <p>h. Which color model is commonly used for printing?</p> <p>i. What is the effect of insufficient resolution?</p> <p>j. What is dynamic range of an image?</p>	10
Part A		
Q2	<p>a. Differentiate linear spatial filter and non-linear spatial filter. Explain frequency domain HPF with one example for each?</p> <p>b. Give applications of imaging in various bands of electromagnetic spectrum.</p>	10
Q3	<p>a. What are various pixel level intensity transforms? Give application of gamma processing?</p> <p>b. Apply histogram equalization on following image and draw the histogram before and after applying histogram equalization:</p> $\begin{bmatrix} 4 & 3 & 5 & 3 & 4 \\ 4 & 4 & 4 & 4 & 4 \\ 5 & 3 & 5 & 3 & 5 \\ 4 & 4 & 4 & 4 & 4 \\ 4 & 3 & 5 & 3 & 4 \end{bmatrix}$	10

P.T.O.

Q4	<p>a. What is Chromatic Adoption? List the applications of hardware based color models? Explain the RGB model.</p> <p>b. Explain the pseudo color enhancement and false coloring. What are its applications?</p>	10																																
Part B																																		
Q5	<p>a. Distinguish between reversible and non-reversible image compression schemes.</p> <p>b. What are various types of redundancy present in an Image?</p>	10																																
Q6	<p>a. What is the transformation kernel for Discrete Fourier Transform. Explain the any three properties of 2D discrete Fourier Transform?</p> <p>b. Find out the Walsh transform coefficients for the following samples of a 1D signal where sample values are $f(0) = 3$, $f(1) = 2$, $f(2) = 5$ and $f(3) = 4$.</p>	10																																
Q7	<p>a. Explain image compression model. What are fidelity criteria?</p> <p>b. Find the first order and second order estimate of entropy of the following image:</p> <div style="text-align: center; margin-left: 100px;"> <table style="border-collapse: collapse; margin: auto;"> <tr><td>21</td><td>21</td><td>21</td><td>95</td><td>169</td><td>243</td><td>243</td><td>243</td></tr> <tr><td>21</td><td>21</td><td>21</td><td>95</td><td>169</td><td>243</td><td>243</td><td>243</td></tr> <tr><td>21</td><td>21</td><td>21</td><td>95</td><td>169</td><td>243</td><td>243</td><td>243</td></tr> <tr><td>21</td><td>21</td><td>21</td><td>95</td><td>169</td><td>243</td><td>243</td><td>243</td></tr> </table> </div>	21	21	21	95	169	243	243	243	21	21	21	95	169	243	243	243	21	21	21	95	169	243	243	243	21	21	21	95	169	243	243	243	10
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