Roll No .....

EX - 8403

B.E. VIII Semester

Examination, June 2013

Digital Image Processing

Elective-IV

Time : Three Hours

Maximum Marks : 100 ***Minimum Pass Marks :35***

Note: i) Attempt all questions. ii) All questions carry equal marks. iii) Assume missing data is necessary.

1. a) Explain the different types of images in details with the help of neat sketches and equations 10

   b) explain the steps involved in sampling and digitization of images. How many minutes are required for a 512x512 image with 256 grey levels at 300 baud rate for transmission? The transmission is accomplished using packets consisting of an start bit, a byte (8 bits) of information and a stop bit. Baud rate means number of bits per second. 10

OR

2. a) What is the basic difference between image processing and audio signal processing. What do you mean by resolution of an image ? Relate resolution with processing time and communication cost. 10

   b) Describe the role of discrete cosine transform. Explain it in addition with an image .select an example to verify your approach to solve the problem of an image using discrete cosine transform. 10

3. a) Write the general expression for forward and inverse transform for 2D square arrays. show that Hadamard transform consists of series expansion of basis function whose values are +1 or -1. 10

   b) What the different types of complexities in DFT. How we can solve them. Explain any one approach for 8 point case. 10

OR

4. a) Explain the action of the following spatial mask on an image. 10

0	-1	0
-1	4	-1
0	-1	0

   b) Compute the DFT of the 8x8 size image f(m,n). (assume any 8x8 matrix). Also write the steps involved in it. 10

5. a) Why the different domains are used for images. Write the names of different domains and explain them. Why do we perform image processing in frequency domain although images are generally represented in spatial domain? 10

   b) Give a general procedure to implement filtering in frequency domain, and compare it with spatial filters. 10

OR

6. a) What is the difference between a high pass filter and a low frequency filter .How does this difference affect the resultant image. What is notch filtering? 10

   b) Why is image enhancement different from image restoration? What is color interpolation? Explain both using examples and sketches. 10

7. a) Explain how the image is degraded. With the help of degradation model explain the restoration process of an image. 10

   b) What is morphology? How it is beneficial for the imaging. Explain the Hit or Miss Transformation for binary images. 10

OR

8. a) Explain the texture in images. What are the different approaches to analyze texture? Give two examples. 10

   b) How the color image is formed. Write the equations of such color combinations. Describe the RGB color model. What do you understand by pseudo color image processing? 10

9. a) What is the need of image compression? How it is useful in transmission and reception. Compare lossless and lossy compressions with example. 10

   b) What is Run Length Encoding (RLE)? Explain with an example. 10

OR

10. Write short notes on the following:

   a) Power law transformation 10

   b) Derivative filters 10

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