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10EC763

Seventh Semester B.E. Degree Examination, Dec.2018/Jan. 2019
Image Processing

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. What are the fundamental steps of digital image processing? **(12 Marks)**

b. Explain brightness adaptation and discrimination. **(08 Marks)**

2 a. Explain image acquisition using single sensor and senor strips with necessary diagrams. **(12 Marks)**

b. What do you understand by image sampling and quantization? **(08 Marks)**

3 a. Mention 2-dimensional orthogonal transform for an image. **(05 Marks)**

b. Define separable unitary transforms. **(05 Marks)**

c. Explain 5-properties of 2-D DFT. **(10 Marks)**

4 a. Define 2-D forward and inverse discrete sine transform and mention its properties. **(10 Marks)**

b. Generate (4 × 4) slant transform matrix given the core matrix $s_1 = \frac{1}{\sqrt{2}}\begin{bmatrix} 1 & 1 \\ 1 & -1 \end{bmatrix}$. Also mention its properties. **(10 Marks)**

PART – B

5 a. What do you mean by image enhancement? Explain 3 types of basic intensity level transformations. **(10 Marks)**

b. A 3 bit image of size 64 × 64 has intensity distribution as shown in table. Implement histogram equalization and plot the same. **(10 Marks)**

Gray level	0	1	2	3	4	5	6	7
Number of pixels	790	1023	850	656	329	245	122	81

Table Q5(b)

6 a. With necessary block diagram. Explain fundamental steps used in frequency domain enhancement. **(08 Marks)**

b. Briefly explain homomorphic filtering and its implementation. **(12 Marks)**

7 a. Differentiate between image restoration and image enhancement. Briefly explain the image degradation model. **(10 Marks)**

b. With necessary mathematical equation, explain different noise model. How will you remove the noise in an image? **(10 Marks)**

8 a. Describe the RGB color model. How their color can be converted to HSI color model? **(10 Marks)**

b. What is pseudo color image processing? How does a gray image covert into color image? **(10 Marks)**

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