

Seat
No.

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DFI1355

ELECTIVE - II
Digital Image Processing
(New) (1312)

P. Pages : 2

Time : Three Hours

Max. Marks : 100

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. All the questions are compulsory & Solve **any two** from each.
5. Figures to the right indicate full marks.
6. Non programmable electronic calculator is allowed.
7. Assume suitable data if necessary.

UNIT - I

1. a) Explain with block diagram of fundamental steps in digital image processing. **10**
b) Define sampling & quantization of image ? Explain image representation process in digital image processing. **10**
c) Compute the HadaMard transform of the image shown. **10**

$$\begin{bmatrix} 2 & 1 & 2 & 1 \\ 1 & 2 & 3 & 2 \\ 2 & 3 & 4 & 3 \\ 1 & 2 & 3 & 2 \end{bmatrix}$$

UNIT - II

2. a) Why histogram processing is important ? Explain histogram equilization technique ? **10**
b) Explain various arithmetic operation useful for image enhancement. **10**
c) What are high pass frequency domain filters ? Explain any one. **10**

UNIT - III

3. a) What are different image compression standards ? Explain compression Model with block diagram in detail. 10
- b) What is data redundancy ? Explain Interpixel redundancy of digital image compression in detail. 10
- c) An alphabet and its symbol probabilities are given as : 10

Symbol	a_1	a_2	a_3	a_4	a_5	a_6
Probability	0.1	0.4	0.06	0.1	0.04	0.3

Construct the huffman tree and find out length bit code.

UNIT - IV

4. a) Explain in detail image degradation model. 10
- b) Discuss the HSI colour model and Explain the process of converting colours from HSI to RGB. 10
- c) What are the different filters used for image restoration ? Explain wiener filter in detail. 10

UNIT - V

5. a) What is mean by image segmentation ? Explain Hough transform in detail. 10
- b) What is thresholding ? Enlist the type of thresholding and explain any one of them in brief. 10
- c) Discuss in brief three principle approaches used in image processing to describe texture of a region. 10
