

CBCS SCHEME

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18AI62

Sixth Semester B.E. Degree Examination, July/August 2022 Digital Image Processing

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain the components of general purpose image processing system with block diagram. (08 Marks)
- b. Describe the process of sampling and quantization in digital image formation. (08 Marks)
- c. Let p and q be pixels of co-ordinates (10, 12) and (15, 20) respectively. Find which distance is minimum between them. (04 Marks)

OR

- 2 a. Discuss relationship between pixels in details. (08 Marks)
- b. Explain three methods of image acquisition using sensors. (06 Marks)
- c. Consider the image segment

3	1	2	①q
2	2	0	2
1	2	1	1
p①	0	1	1

Let $V = [0, 1]$, compute the length of 4, 8 and m paths between p and q. (06 Marks)

Module-2

- 3 a. Explain the smoothing of images in frequency domain using : (08 Marks)
 - i) Ideal low pass filter
 - ii) Butterworth low pass filter.
- b. Discuss the following intensity transformation functions : (12 Marks)
 - i) Image negative
 - ii) Log transformation
 - iii) Power law transformations.

OR

- 4 a. With block diagram, explain homomorphic filtering. (10 Marks)
- b. Explain periodicity and symmetry properties of 2D – DFT with equations, examples and diagrams. (10 Marks)

Module-3

- 5 a. Explain any five probability density functions. (10 Marks)
- b. Describe three method of estimating the degradation function in image restoration. (10 Marks)

OR

- 6 a. Explain any three order statistic filters. (10 Marks)
- b. Discuss Wiener filtering and constrained least square filtering in image restoration system. (10 Marks)

Module-4

- 7 a. Discuss the following colour models :
i) RGB colour model
ii) CMY colour model
iii) HIS colour model. (12 Marks)
b. Explain pseudo colour processing with block diagram. (08 Marks)

OR

- 8 a. Explain any six basic morphological algorithm with equations and example for each. (12 Marks)
b. Describe Erosion, Dilation, opening and closing operations with equation and an explain for each. (08 Marks)

Module-5

- 9 a. Explain the following image segmentation :
i) Line detection
ii) Edge detection. (12 Marks)
b. Discuss region splitting and merging. (08 Marks)

OR

- 10 a. Explain any two types of boundary descriptors. (10 Marks)
b. Explain any two type of regional descriptors. (10 Marks)

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