

328749(28)

B. E. (Seventh Semester) Examination, April-May 2020/

NOV-DEC 2020

(New Scheme)

(Et & T Branch)

DIGITAL IMAGE PROCESSING

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Attempt any two parts of (b), (c) and (d) of all questions. Part (a) of each unit is compulsory.

Unit-I

1. (a) Define Image Processing. 2
- (b) With the help of block diagram, explain the fundamental steps in digital image processing. 7

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- (c) Explain the concept of sampling and quantization using a single example. 7
- (d) Write short notes on : 7
- (i) Elements of Visual Perception
 - (ii) Image Sensing and Acquisition

Unit-II

2. (a) Define Histogram. 2
- (b) Explain with a block diagram, basic steps of image enhancement in frequency domain. 7
- (c) Write short notes on : 7
- (i) Gaussian filters
 - (ii) Homomorphic filtering
- (d) Write short notes on : 7
- (i) Intensity Slicing
 - (ii) Gray level to color transformation

Unit-III

3. (a) Define segmentation. 2

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- (b) Explain some basic relationship between Pixels, Point, Line and Edge Detection. 7
- (c) Write short notes on : 7
- (i) Canny Edge Detection
 - (ii) Pyramid Edge Detection
- (d) Explain boundary descriptors and fourier descriptors. 7

Unit-IV

4. (a) Define Thresholding in image processing. 2
- (b) Explain use of boundary characteristics of Histogram improvement and local thresholding. 7
- (c) Write short notes on : 7
- (i) Global Thresholding
 - (ii) Adaptive Thresholding
- (d) Explain region growing, region splitting and merging. 7

Unit-V

5. (a) Define Image Compression. 2

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- (b) Explain basic model of image restoration process.
Explain any four important noise probability density function. 7
- (c) Explain Wiener filtering in image processing. 7
- (d) Write short notes on : 7
- (i) Geometric Transformation
 - (ii) Spatial Transformation