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322740(22)

B. E. (Seventh Semester) Examination,

April-May 2020/NOV-DEC 2020

(New Scheme)

(CSE, IT Engg. Branch)

DIGITAL IMAGE PROCESSING

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : *Attempt all questions. Part (a) from each question is compulsory. Attempt any* ***two*** *parts from part (b), (c) and (d).*

Unit-I

1. (a) What are the digital images? What are different types of images used in digital processing? 2

(b) What is image formation model? Discuss the basic

characteristics of image formation model. 7

(c) What are the Histograms? Define histogram equalization and histogram specialization equalize the given Histogram. 7

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

Unit-II

2. (a) What is image segmentation? What is the utility of image segmentation in digital image processing. 2

(b) What is Filtering? Briefly explain the various techniques involved in frequency domain filtering. 7

(c) What short notes on : 7

(i) Edge detention & Edge Linking

(ii) Split and merge technique

(iii) 2-Dimensional discrete fourier transform

Unit-III

3. (a) What is morphoological Image processing? Mention the elementary operations performed on images. 2

(b) Elaborate the concept of Erosion and Dilation in Morphological image processing. Carryout Erosion and dilation of following image using given structuring element. 7

0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	**1**	**1**	**1**	**1**	0	0	0
0	0	0	**1**	**1**	**1**	**1**	0	0	0
0	0	0	**1**	**1**	**1**	**1**	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

①	**1**
1	**1**

(c) Discuss the application of morphological Image Processing in Boundary Extraction and Region Filling with suitable example. 7

Unit-IV

4. (a) What is data Redundancy? Enumerate various types of data redundancy in digital image processing. 2

   (b) What is comperession? Discuss briefly the various compression techniques available for Digital image processing. 7

   (c) What does JPEG stands for? Explain the basic followed in JPEG compression. What are the merits and demerits of JPEG technique? 7

Unit-V

5. (a) What is the role of shape numbers and descriptors in representation of digital image? 2

   (b) What is correspondance problem? Discuss various techniques for dealing the correspondence problem. 7

   (c) What is SFM problem? Briefly explain the techniques of genrating structure from motion in Digital Image Processing. 7