Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058, India

(Autonomous College Affiliated to University of Mumbai)

Mid Semester Examination

September 2018

SYNOPTIC

Max. Marks: 20 | Duration: 1 Hour

Class: B.E. | Semester: VII

Course Code: ITC 7051 | Branch: Information Technology

Name of the Course: Image Processing

Instruction:

(1) All questions are compulsory

(2) Draw neat diagrams

(3) Assume suitable data if necessary

Q No.		Max. Marks	CO
Q.1	If all the pixels in an image are shuffled, will there be any change in the histogram? Justify. If all the pixels in an image are shuffled, there will not be any change in the histogram of the Image.[1 marks] A histogram gives only the frequency of occurrence of the grey level. Justification with examples[3 Marks]	04	CO1
Q.2	Given an input image f of size (3*3). Find filtered image using low pass median filter mask. Assume virtual rows and column with repeated border pixels. $f =$	05	CO1

5	6	2
2	3	1
6	1	0

Using Low pass Filter, Arranging all the 9 Pixels in Ascending or Descending order and locating the median for each output pixel [3Marks]

Filtered Image[2 Marks]

$g =$

5	3	2
5	2	1
3	1	1

OR

Justify that Median filter is the best solution to remove salt and pepper noise.

What is Salt and Pepper noise: Black and White pixels spot in an Image.[1 marks]

Working of median Filter[2 marks]

Justification how Salt and Pepper noise are eliminated.[2 Marks]

Q.3	Let X(n) = {1,3,5,7}. Compute X(K) using DIT-FFT Method. Determine the suitable DFT property and compute FFT of X1(n) = {7,1,3,5} using X(K). DIT-FFT Butterfly Diagram[1 Marks] X{K} = {16, -4+4j, -4, -4-4j}[2 Marks] Using DFT property, X1{K} = { 16,4+4j,4,4-4j}[2 Marks]	05	CO3
Q.4	Given the Image-A and Structuring element-B below, use Region filling to fill up the image. 1.Start with a pixel inside the boundary as X0 1. X1 = (X0 Dilation B) intersected by complement of A, Similarly, X2 = (X1 Dilation B) intersected by complement of A, Similarly for X3,X4 [1 Marks Each] Finally A union X4[1 Marks]	06	CO1