



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
August 2017

Max. Marks: 30

Class: B.E.

Course Code: ITC 7051

Name of the Course: Image Processing

Duration: 90 Min

Semester: VII

Branch: Information Technology

SYNOPTIC

Q.1 Linear Convolution[05 Marks]

$g(x,y) =$

5	16	19	14
23	63	73	48
24	59	66	40

Q.2. Determine and Sketch the all 8 possible edges in the Image and also the cost of each edge.[3 Marks]

Strongest Edge:[2 Marks]

Cost: 10

7	2	2
5	7	2
5	1	0

7	2	2
5	7	2
5	1	0

Q. 3.a. Drawn 4 Point DIF-FFT Diagram [2 Marks]

Computation of each row[4 Marks]

4	-2	0	-2
4	2j	0	-2j
4	2	0	2
4	-2j	0	2j

Computation of Each Column[4 Marks]

16	0	0	0
0	0	0	-8
0	0	0	0
0	-8	0	0

Q. 3.b. $X(K) = \{10, -2+2j, -2, -2-2j\}$ [06 Marks]

$X1(n) = \{10, 2-2j, -2, 2+2j\}$ [04 Marks]

Q. 4.a.

Original Image

Z1	Z2	Z3
Z4	Z5	Z6
Z7	Z8	Z9

Low pass Filter

1/9	1/9	1/9
1/9	1/9	1/9
1/9	1/9	1/9

High Pass Filter

High Pass Filter

-1/9	-1/9	-1/9
-1/9	8/9	-1/9
-1/9	-1/9	-1/9

Original - Low Pass=High Pass

High Pass mask: $1/9 *$

-1	-1	-1
-1	8	-1
-1	-1	-1

[05 Marks]

Q. 4 b i. Explanation of Salt and Pepper noise and Median Filter [2 Marks]

Justification of removing salt and pepper noise by median filter with an example [3 marks]

Q. 4 b ii Explanation of Contrast Stretching and Thresholding with graphs[3 marks] and Justification[3 Marks]