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**MANIPAL INSTITUTE OF TECHNOLOGY****MANIPAL**

(A constituent unit of MAHE, Manipal)

II SEMESTER MCA**END SEMESTER EXAMINATIONS, APR/MAY 2018****SUBJECT: DIGITAL IMAGE PROCESSING [MCA 5003]****REVISED CREDIT SYSTEM****(23/04/2018)**

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ❖ Answer **ALL** the questions.
- ❖ Missing data may be suitable assumed.

1A.	What is Digital Image Processing (DIP)? Explain the key steps involved in it briefly.	5
1B.	Define pixel in a digital image. Discuss the different types of relationships exists with its neighborhood.	3
1C.	Define Adjacency and Connectivity.	2
2A.	<p>A path from pixel p with coordinate (x,y) to pixel q with coordinate (s,t) with values from $V=\{2,3,5\}$. Define 4-, 8-, and m-paths between p and q pixels in the sub image given below.</p>	5
2B.	What is Image Enhancement? Discuss contrast stretching with the help of a transformation function.	3
2C.	What is gamma correction?	2
3A.	What is Convolution and Correlation of an Image? Explain operations in the 1D spatial domain with an example.	5
3B.	Why Laplacian operator is normally used for image sharpening operation? Discuss.	3
3C.	What is Image Segmentation?	2

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Grey Levels (r_k)	No. of Pixels (n_k)
0	00
1	10
2	12
3	20
4	30
5	50
6	60
7	74

4A.

5

4B.

3

4C.

2

5A.

5

5B.

3

5C.

2