Code No: C0510, C5810 **R09**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I - SEMESTER EXAMINATIONS APRIL/MAY-2012
IMAGE PROCESSING AND PATTERN RECOGNITION
(COMMON TO COMPUTER SCIENCE, COMPUTER SCIENCE AND ENGINEERING)

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks
- - -

1.a) Define Euclidean distance, chessboard distance, and city block distance measures.

b) Consider the image segment shown in figure 1 and let v = {0,1}. Compute the lengths of the shortest 4-path, 8-path and m-path between p and q.

```
      3  1  2  1 (q)
      2  2  0  2
      1  2  1  1
(p)   1  0  1  2
```

Fig-1

2. Explain about any four intensity function transformation techniques of image enhancement in spatial domain.

3. With the help of neat sketches and equations explain the Hit-or-miss transformation morphological technique.

4. Discuss about any four gradient operators used for edge detection, by giving the required masks.

5.a) Distinguish between spatial compression and statistical compression techniques.

b) Explain the arithmetic coding compression technique.

6. Explain about the following:
a) parametrical descriptors,
b) regional descriptors,
c) topological descriptors, and
d) texture.

7. Discuss about the any two automatic pattern recognition systems in detail and compare them.

8. Explain the k-means pattern classification algorithm with a suitable example.

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