Name	
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Roll No. :	An Administrative Contraction and Excellent
Invigilator's Signature :	

CS/M.TECH(ECE-COMM)/SEM-2/MCE-205B/2012

2012

IMAGE PROCESSING & PATTERN RECOGNITION

Time Allotted : 3 Hours

Full Marks: 70

The figures in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable.

Answer Q. No. 1 and any *four* from the rest.

- 1. Choose the correct alternatives for the following : $14 \times 1 = 14$
 - i) The process of extraction information from the image is called as
 - a) image enhancement b) image restoration
 - c) image analysis d) image compression.
 - ii) An image is considered to be a function of a (x, y) where a represents
 - a) height of image b) width of image
 - c) amplitude of image d) resolution of image.
 - iii) Which is the image processing technique used to improve the quality of image for human viewing ?
 - a) Compression b) Enhancement
 - c) Restoration d) Analysis.

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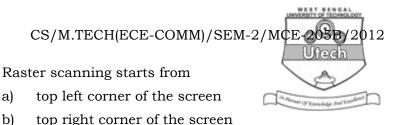
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- iv) Which type of enhancement operations are used to modify pixel values according to the value of the pixel's neighbors ?
 - a) Point operations b) Local operations
 - c) Global operations d) Mask operations.
- v) Image compression is
 - a) making image look better
 - b) sharpening the intensity-transition regions
 - c) minimizing degradation over image
 - d) reducing the redundancy of the image data.
- vi) What algorithm is used in fingerprint technology ?
 - a) Intensity based algorithm
 - b) Pattern based algorithm
 - c) Feature based algorithm
 - d) Recognition algorithm.
- vii) Which technique is used to determine changes between two images ?
 - a) Image differencing b) Segmentation
 - c) Skin texture analysis d) Image differencing.
- viii) An image is converted to two-dimensional matrix of pixel values by
 - a) pixel grabber b) bough transform
 - c) masking d) none of these.
- ix) The initial step in any image processing technique is
 - a) segmentation b) masking
 - c) image acquisition d) normalization.

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- c) bottom left corner of the screen lines
- d) bottom right corner of the screen.
- xi) What will be the size of 1200×1600 image of 16 bit depth ?
 - a) 29·29 MB b) 117 kB
 - c) 192 kB d) None of these.
- xii) RLE stands for

x)

- a) Reverse Line Encoding
- b) Run Length Encoding
- c) Run Line Encoding
- d) none of these.

xiii) Histogram stretching is a process of

- a) image enhancement b) image recognition
- c) image fusion d) image segmentation.
- xiv) Which among the following image processing techniques is fast, precise and flexible ?
 - a) Optical b) Digital
 - c) Electronic d) Photographic.
- Describe K-Means Clustering Algorithm with advantages and disadvantages.
 10 + 2 + 2
- 3. What do you mean by Hierarchical clustering ? What is the significance of crossover & mutation over GA algorithm ? Describe Fuzzy *C*-Mean Clustering with limitation.

2 + 2 + 2 + 8

 Discuss about gray level image and 24-bit true RGB colour image. Describe JPEG compression technique. 2 + 4 + 8

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- 5. What are histogram and histogram equalization ? Give example. What do you mean by Contrast Enhancement ? Say something about Run Length Encoding. What is Region Adjacency Graph ?
 2 + 2 + 3 + 4 + 3
- What is QBIR ? Draw the usefulness of KDB tree and Quad tree. Give some techniques for edge detection. 2 + 3 + 3 + 6
- 7. Draw the utility of natural grouping. Write down the algorithm for MST using *K*-Means algorithm and ISODATA algorithm. 2 + 6 + 6
