



(Following Paper ID and Roll No. to be filled in your Answer Book)

**PAPER ID : 214409**

Roll No.

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## MCA

(SEM. IV) THEORY EXAMINATION, 2014-15  
**IMAGE PROCESSING AND PATTERN RECOGNITION**

Time : 3 Hours]

[Total Marks : 100

**Note:** Attempt all questions.

1 Attempt **any four** parts of the following: **5x4 = 20**

- (a) What is a pattern? Explain working of a typical pattern recognition system.
- (b) What are the different stages of a fingerprint recognition system?
- (c) What is unsupervised classification? Describe the techniques of unsupervised classification.
- (d) How a person is recognized by his/her speech. Explain?
- (e) Describe text recognition process in brief.
- (f) Explain the challenges of a pattern recognition system.

**2** Attempt **any two** parts of the following: **10x2 = 20**

- (a) What is the minimum error rate classification? Describe the principal used by Neyman Pearson criterion for adjusting the decision boundaries.
- (b) What is Bayesian classifier? How can the Bayesian classifiers handle the problem of missing and noisy data?
- (c) How the feature extraction is different from the feature selection process. Explain your answer by giving a suitable example.

**3** Attempt **any two** parts of the following: **10x2 = 20**

- (a) Differentiate between structural and syntactic pattern recognition techniques with examples. .
- (b) Describe least mean squares filtering technique with an example.
- (c) Write short notes on the following:
  - (i) Syntax directed recognition
  - (ii) Testing and training patterns

4 Attempt **any two** parts of the following: **10x2 = 20**

- (a) What is image transformation? Describe any two image transformation techniques.
- (b) Can two different images have the same histogram? Justify your answer with examples.
- (c) What do you mean by image smoothing? How is it different from image sharpening.

5 Write short notes on the following **5x4 =20**

techniques : (any four)

- (a) Image segmentation
- (b) Point detection
- (c) Line detection
- (d) Edge detection
- (e) Image restoration
- (f) Image compression

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