

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

PAPER ID :

Roll No.

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M.C.A.

Theory Examination (Semester-IV) 2015-16

IMAGE PROCESSING AND PATTERN RECOGNITION

Time : 3 Hours

Max. Marks : 100

SECTION-A

1. Attempt all parts. Write answer of each part in Short.

(2x10=20)

- What is Pattern Recognition?
- How machine learning is significant in Pattern Recognition?
- Differentiate between supervised and un-supervised learning.
- What do you mean by clustering?
- Suppose a pair of fair disc is tossed. Find the probability of the sum of dots is 9.
- Discuss the concept of image registration.
- What do you mean by image processing?
- Write the effect of reducing sampling and quantization?
- What is contrast stretching?
- Discuss different types of data used in cluster analysis.

SECTION –B

2. Attempt any five questions from this section.

(10x5=50)

- Describe discriminant functions. Determine the discriminate functions for following:
 - Multi-category Case
 - Two category Case
- How the classifications decisions are made using Bayesian Decision Theory? Also explain the Minimum-Risk Classification.
- Describe K means algorithm. Also explain limitations of K means clustering?
- Explain pseudo color image processing with examples?
- Describe the convex hull method. Explain the segmentation of image processing.
- Describe any one image sharpening method in detail.
- Explain Hidden Markov Model (HMM) and Fisher's Linear Discriminate.
- Differentiate between clustering and classification. Explain criteria function for clustering.

SECTION-C

Note: Attempt any two questions from this section.

(15x2=30)

- What do you mean by Pattern Recognition? Describe design principle of pattern recognition system with an example. Also Discuss K means algorithm with example.
- Explain the concept of Region based approach? Also discuss the term thresholding, optimal thresholding and segmentation in detail.
- Write short note on the following:
 - Clustering vs. Classification
 - Cluster validation
 - Mean and Covariance