Reg. No. ☐☐☐☐☐☐☐☐☐

MCA 505(E2)

Fifth Semester M.C.A. Degree Examination, December 2018
Elective
PATTERN RECOGNITION

Time : 3 Hours

Max. Marks : 75

Note : *Answer* **any five** *questions.* **All** *questions carries* **equal** *marks.*

1. a) Define Pattern recognition. Discuss its different phases. **9**

   b) Define the terms : (i) Feature Extraction (ii) Supervised Learning (iii) Unsupervised Learning. Give an example to each. **6**

2. a) Discuss discriminant functions for the normal density. **8**

   b) Explain various parameter estimation methods of pattern classification. **7**

3. a) Explain MLE assuming a Gaussian distribution of the features considering unknown mean and known co-variance matrix. **9**

   b) Explain the mean of a standard normal distribution. **6**

4. a) Describe the mathematical model of a neural network. Illustrate. **9**

   b) What are challenges in Bayesian decision theory ? **6**

5. a) Define within-class scatter matrix and between-class scatter matrix. Discuss the discriminate analysis for 2-class problem. **6**

   b) Discuss different types of clustering techniques with an example. **9**

6. a) Discuss how Principal Component analysis is used as a feature extraction mechanism. **10**

   b) Present a brief note on Fisher-Linear Discriminant analysis approach. **5**

7. a) Describe the Fuzzy C-means clustering algorithm. **9**

   b) Explain following criteria functions for clustering : **6**
      i) The sum of squared error.
      ii) Related minimum variance.

8. a) Discuss the importance of deep learning considering the present day applications. **7**

   b) Discuss the steps in designing a face recognition system. **8**

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