

Final Exam  
Maximum marks: 80

Date: May 11, 2018  
Duration: 3 hours

1. Describe with examples and equations; the measures of Location, spread, Shape and dependency. [3 + 3 + 3 + 3 = 12]
2. Describe the motivations of standardization and normalization of data sets? Give one method for performing these operations. [6 + 6 = 12]
3. Describe the Branch and Bound Feature selection method with an example of selecting TWO optimum features out of SIX features. [10]
4. Provide the significance of dispersion score with examples and equation in the classification of a data set. [8]
5. Differentiate between real and artificial data sets with their significance for pattern classification task . With Bayes decision rule, demonstrate the behaviour of misclassification error with the increase of training and test samples. [4 + 6 = 10]
6. What are generalization and over-fitting, and their relations? Discuss the effect of these factors in pattern classification problems. [4 + 4 = 8]
7. Explain with the support of mathematical equations and illustrations and applications of
  - a. basic binary and grayscale mathematical morphological operations [4]
  - b. binary and grayscale granulometric and anti-granulometric analyses in image analysis and pattern classification [8]
  - c. the computations of binary and grayscale morphological medians and their duals. [8]