



- Notes :
1. All questions carry marks as indicated.
 2. Solve Question 1 OR Questions No. 2.
 3. Solve Question 3 OR Questions No. 4.
 4. Solve Question 5 OR Questions No. 6.
 5. Solve Question 7 OR Questions No. 8.
 6. Solve Question 9 OR Questions No. 10.
 7. Solve Question 11 OR Questions No. 12.
 8. Assume suitable data whenever necessary.
 9. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Differentiate supervised learning and unsupervised learning. 7
b) Explain the concept of feature extraction used in pattern recognition system with example. 7

OR

2. a) What are the problems arises by activities in design pattern recognition system? 7
b) Explain the concept of classification & post processing in pattern recognition. 7
3. a) What are the challenges in Bayesian decision theory? 6
b) Write short note on General theory of Bayesian parameter estimation. 7

OR

4. a) What is discriminant function? Explain how Bayesian can help for multi-classification problem? 7
b) Define the terms loss, risk, decision rule. 6
5. a) What is pattern clustering? How it differs from classification? 6
b) State and explain various clustering techniques. 7

OR

6. a) Explain Hierarchical clustering in detail. 6
b) Discuss Hypothesis testing in cluster validity. 7
7. a) Explain KL-transform in detail. 6
b) Discuss the various elements of formal grammar. 7

OR

8. a) Explain stochastic algorithm for feature selection in pattern recognition. 7
b) Discuss structural pattern recognition in detail. 6
9. a) Write HMM Decoding algorithm. With the help of example explain the state sequence decoding of Hidden Markov model. 7
b) Explain Recognition task of HMM. 7

OR

10. a) Explain linear support vector machine. 7
b) What is the role of feature selection in support vector machine. 7
11. a) Explain pattern classification using genetic algorithm. 7
b) Explain fuzzy pattern classifier. 6

OR

12. a) Compare fuzzy logic Vs crisp logic. 7
b) Explain Fuzzification and De fuzzifications. 6
