Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

SEVENTH SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 2019

Course Code: EC467

Course Name: PATTERN RECOGNITION

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks. Marks

1	a)	Explain Bayes decision rule. Explain how it can be used for two class classification.	(5)
	b)	In a town it was estimated that 3% of people have a particular disease. A diagnosis test was conducted for all the people, which yielded 8% false positive and 92% true positive results. A person is found as positive after the test. What is the probability that this person is truly having the disease?	(5)
	c)	Explain curse of dimensionality. State the significance in pattern recognition problems.	(5)
2	a)	Describe the design principles of pattern recognition system with an example	(5)
	b)	Assuming a Gaussian distribution of the features, Explain the general principle of the maximum likelihood estimation for the following cases 1. Unknown mean and known covariance matrix 2. Unknown mean and unknown covariance matrix	(10)
3	a)	Give the expression of a multi-variate Gaussian distribution explaining all parameters	(5)
	b)	Write a note on first order Hidden Markov Models. How is a Hidden Markov Model different from a Markov model?	(10)

PART B

Answer any two full questions, each carries 15 marks.

4	a)	Compare parametric and non parametric methods for probability density function estimation	(7)
	b)	Explain the perceptron learning algorithm in detail	(8)
5	a)	Explain Parzen window method.	(10)
	b)	How can we identify the decision planes using support vector machine?	(5)
6	a)	What do you mean by linearly separable classification problem? Give examples	(7)
	b)	With an example explain decision tree for pattern classification.	(8)

PART C

Answer any two full questions,each carries 20 marks.

7	a)	Describe the architecture and learning algorithm of back propagation networks. List its limitations.	(10)
	b)	Explain K means clustering algorithm.	(10)
8	a)	Explain the Adaboost algorithm. Mention its advantages.	(10)
	b)	Explain the types of hierarchical clustering	(10)
9	a)	Draw the model of a single artificial neuron	(5)
	b)	Define the terms: weights, bias, activations with respect to neural networks	(5)
	c)	Explain the scattering criteria for clustering?	(10)

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