B.E. (Computer Science & Engineering) Eighth Semester (C.B.S.)

Elective-III : Pattern Recognition

P. Pages : 2 **NRT/KS/19/3692**

Time : Three Hours * 0 6 9 6 * Max. Marks : 80

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. Due credit will be given to neatness and adequate dimensions.
9. Assume suitable data whenever necessary.
10. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Explain the design cycle of pattern recognition with block diagram. **7**

b) Explain various application of pattern Recognition with example. **6**

OR

2. a) Define pattern Recognition. Also explain it's design principles. **7**

b) Write a short note on. **6**
i) Supervised learning
ii) Unsupervised learning
iii) Reinforcement learning

3. a) Illustrate the concept of minimum risk estimators with example. **7**

b) What is conditional probability? Explain its characteristic.

OR

4. a) Differentiate between probability distribution and probability density functions with example. **7**

b) Explain joint Distribution and Densities with example. **6**

5. a) Define minimum error rate classification and its relation to Bayesian risk minimization. **7**

b) Explain Decision Boundaries in detail with example. **7**

OR

6. a) What does a confusion matrix do? Explain in detail with proper example. **7**

b) What is characteristic curves? Explain in detail with example. **7**

7.	a)	Write and explain about back propagation algorithm.	**7**
	b)	How does support vector machine (SVM) work explain in details.	**7**

OR

8.	a)	Explain Hidden Markov model in detail.	**7**
	b)	What is fuzzy classifier? Explain fuzzy based classifiers.	**7**
9.	a)	Explain Smooth kernel function and its interpretation.	**7**
	b)	Explain Adaptive Decision Boundaries with example.	**6**

OR

10.	a)	What is Histogram? How is a real histogram mode?	**7**
	b)	What is kernel and window estimators explain in detail.	**6**
11.	a)	Differentiate between hierarchical clustering and partitional clustering techniques.	**7**
	b)	Describe k-means clustering algorithm with example.	**6**

OR

12.	a)	What is clustering? Explain types of clustering.	**7**
	b)	Explain any one hierarchical clustering algorithm basic steps with suitable example.	**6**

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