Printed Pages : 2 Roll No. | | | | | | | | | | NCS080

B.TECH.

THEORY EXAMINATION (SEM–VIII) 2016-17

PATTERN RECOGNITION

Time : 3 Hours *Max. Marks : 100*

Note : Be precise in your answer. In case of numerical problem assume data wherever not provided.

SECTION – A

1. Explain the following: **10 x 2 = 20**

(a) Differentiate Classification with Clustering.

(b) What do you mean by pattern recognition? Explain.

(c) What is Learning? Discuss Supervised & Un Supervised Learning.

(d) Discuss Reinforcement Learning.

(e) What is Back Propagation Algorithm?

(f) Discuss Normal Density Function.

(g) Discuss Cluster Validation.

(h) What is Conditional Probability?

(i) Discuss various Pattern Recognition Approaches.

(j) Discuss Agglomerative Clustering.

SECTION – B

Attempt any five parts of the following questions: **5 x 10 = 50**

(a) Discuss the Design Process of the Pattern Recognition System with suitable block diagram.

(b) What is Bay's Theorem? Explain. Also discuss Bay's Classifier using some example in detail.

(c) What do you mean by Clustering? Explain. Discuss K-means clustering algorithm with suitable example.

(d) What is a Discriminant Function? In a two class problem, the likelihood ratio is given as follows: $P(X|C_1) / P(X|C_2)$. Write the discriminant function in terms of the likelihood ratio.

(e) What do you mean by Dimension Reduction? Discuss Principal Component Analysis (PCA) algorithm for dimension reduction.

(f) What do you mean by Fuzzy Decision making? Also discuss the Fuzzy Classification using suitable example.

(g) Write an algorithm for K-Nearest Neighbor Estimation. Explain.

(h) Explain the following and discuss their significance in Pattern Recognition with suitable example :

(i) Mean and Covariance

(ii) Chi Square Test.

SECTION – C

Attempt any two parts of the following questions: **2 x 15 = 30**

3 What is Baysian Decision Theory? Discuss Two Class Category Classification in detail.

4 What is Hidden Markov Model (HMM)? Explain following in HMM:

(i) Forward Algorithm

(ii). Backward Algorithm.

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5 **Write a short note on the following:**

(i) Parametric vs. Non-Parametric Pattern Recognition methods.

(ii) Parzen Windows

(iii) Bayesian estimation

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