Paper Code: ECS 074	Roll No.									

B.Tech.
(SEM VII) ODD SEMESTER EXAMINATION 2015-16
PATTERN RECOGNITION

[Time: 3 hrs.] **[Max. Marks: 100]**

Note- ***Attempt All Questions. All Questions carry equal marks*:-**

1. Attempt any **FOUR** parts of the following: [5x4=20]
   (a) Define a pattern. What is pattern recognition?
   (b) Describe basic pattern recognition approaches in brief.
   (c) What is learning? Describe any two learning methods in brief.
   (d) Describe the following statistical parameters in brief:
      (i) mean,
      (ii) variance and
      (iii) covariance.
   (e) Describe normal distribution. What is standard normal distribution?
   (f) What are the applications of a pattern recognition system?

2. Attempt any **TWO** parts of the following: [10x2=20]
   (a) Explainthe statistical pattern recognition model in detail.
   (b) What do you mean by dimensionality reduction? Describe any one method of dimensionality reduction with an example.
   (c) Describe the principle of Naïve Bayse classifier with an example.

3. Attempt any **TWO** parts of the following: [10x2=20]
   (a) Describe maximum likelihood estimation method with an example.
   (b) Explain Fisher Discriminant Analysis technique and also discuss its advantages in classifying the patterns.
   (c) Write short notes on the following:
      (i) Hidden Markov Model (HMM)
      (ii) Gaussian mixture model (GMM)

4. Attempt ant TWO of the following: [10x2=20]
   (a) Describe k-nearest neighbor estimation technique with example.
   (b) Write short notes on the following:
      (i) Nearest neighbor rule
      (ii) Density estimation
   (c) What do you mean by fuzzy classification? Explain any one fuzzy classification technique.

5. Write short notes on any FOUR of the following: [5x4=20]
   (a) K-means clustering
   (b) Cluster validation
   (c) Neural networks
   (d) Feature selection
   (e) Template matching
   (f) Training and test data sets