# DEPARTMENT OF COMPUTER APPLICATIONS PHD ENTRANCE EXAMINATION SYLLABUS

#### **COMPUTER APPLICATIONS**

#### **Data Mining**

Introduction, Definition, KDD vs. DM, DBMS vs. DM, DM techniques, Issues and challenges in DM, DM applications, Classification Techniques-Bayesian classification, two-class and generalized class classification, Classification error, Decision boundary, Discriminant functions, Non-parametric methods for classification. Clustering analysis- Types of data in cluster analysis, Partitioning algorithms, Hierarchical, Density based, Grid based, Model based algorithms, High dimensional & Categorical data clustering.

## **Geographical Information Systems and Global Positioning System**

Definition and scope of GIS; GIS components, applications of GIS, GIS Data base, Geographic data: Spatial and non-spatial, Data input: Digitization of maps and imageries, 3D models: TIN, DEM, DTM Query in GIS; Global Positioning System, Introduction to Global Positioning System; GPS satellites constellations; GPS segments: Space, Control, User; GPS antennas, signals and codes; GPS receivers; Modes of measurements and post processing of data; Accuracy of GPS measurements; Application of GPS.

## Video Processing and Multimedia

Video processing basics, video signal, still image, multimedia technology, MPEG, video frame

### **Digital Image Processing**

Introduction on Digital Image processing, Fundamental steps on DIP, Gradient Operator, Basic relationships between neighbouring pixels, Image Enhancement, Fundamentals on Morphological operation, Image Compression