2nd Sessional Syllabus (Semester- VII)

ML Syllabus

1) EM
2) HMM (Hidden Markov Model)
3) SVM (Support Vector Machine)

1) Introduction to Clustering
2) Terminology and Partition based Clustering, K-mean, Introduction to K-medoid
3) K-median, K-Mode need and introduction to PAM algorithm
4) PAM(k-medoid) algorithm with Example, Limitation of Distance based clustering
5) Density based Algo :DBSCAN
6) Density based Algo :DBSCAN Example and Grid based clustering

AI Syllabus

- PROLOG programs using cut and fail
- Fuzzy Rule based Inference and Examples
- Game playing introduction, Mini max algorithm-examples, Alpha beta pruning algorithm-examples
- Genetic algorithm concepts and examples

CC Syllabus

Dominator, back edge and natural loop for control flow graph
Introduction to runtime support environment
Parameter passing methods
Static storage allocation
Dynamic storage allocation
Activation record structure details
Allocation of nested procedure (static-dynamic link)
Display stack
static and dynamic scope
Deep vs. shallow access
Heap storage allocation
Bin based
Boundary tagging

Top-Down Parsing
Predictive Parsing
FIRST, FOLLOW and Parsing Table Construction
Error Recovery in Top-Down Parsing
Bottom-Up Parsing
Shift-Reduce Approach
Operator Precedence Parsing

Sr.	BDA Syllabus
1	Replication Strategies in Cassandra - SimpleStrategy, NetworkTopologyStrategy Demonstration - Adding a node to cassandra cluster, Create and Drop Keyspaces, Create and Drop Tables Primary keys in table - Partining key and Clustering columns, Creating table sorted on one column/two columns Imbalance partitions, Two Partitioning keys, Read Consistency levels, Write consistency levels Checking and setting consistency levels, Inset operation, Select Operation, Update Operation TTL - Time to Live, Collections - Set, List, Map, Secondary Index UUID - Universally Unique Identifier, Time UUID Counters, Importing and exporting data to/from CSV file Materialized views, Cassandra Python Driver Cassandra - Snitch, Gossip Protocol, Batch v/s Real-time big data analytics, Limitations of Hadoop, Spark Advantages, Spark Use Cases Tracing example with distributed solution, MapReduce Solution and Spark solution Result Comparison, Why Spark Spark with Hadoop - Spark + HDFS, Spark + MapReduce, Spark + Hadoop YARN Spark Features, Overview of Spark Ecosystem Overview of Spark Streaming, Spark SQL, MLlib, GraphX, SparkR Spark Solar Syastem, Why Spark replaced all other Big Data Analytics Technologies Spark Cluster Processing, HDFS Block v/s Spark Partition Partitions in Spark, SparkDynamicExedcutionAllocation, Spark RDD Fundamentals, RDD Features
2	Hive Introduction Hive Architecture, Data Model - Database, table, partition and bucket Pig/Hive with Apache Tez Vs Pig/Hive MapReduce Managed Vs External Type of tables Data Types and File Formats with Hive SerDe - Serialization protocol Sequential fiel type for grouping smaller sized data files

	Installation steps of hive from GettingReady Hive url DDL DML Use of local, external, partition, clustered, skewed like keywords Fundamentals of Distributes Systems: architecture, inherent limitation, Distributed File System. Design - Loosely coupled hardware and tightly coupled software with middleware services on top of Network OS Distributed Systems Design Issues Distributed Mutual Exclusion - Cars and Bridge problem statement with message passing enabled Lamport's DME Algo Corum based Maekawa's DME algo Token in a DME - A data structure to hold info. Challenges involved in maintaing uniqeness of token. Lamport's algo for Distibuted Mutual Exclusion - uses logical clock Example of Lamport with space time diagram Correctness proof by contradiction Maekawa's DME using quoram based approach Handling deadlock using messages INQUIRE, YIELD, FAIL and GRANT Token as a data structure Token based algorithm - Suzuki Kasami's Broadcast algo The purpose of sequencer

IP Syllabus
Chapter 4 :All the Topics which were NOT part of sessional 1 For example, Sampling and the Fourier Transform of Sampled Functions,Sampling theorem, Signal recovery, Anti aliasing, Illustration of aliasing, Function Recovery from sampled Data, 2-D impulse train, 2-D sampling and sampling theorem, Sampling, Over sampling & under sampling in frequency domain, Aliasing in image, Anti-aliasing in images, Interpolation and re-sampling, Moirè Patterns, DFT, 2-D Discrete transform pair, Properties of Fourier transform,2-D circular convolution, 2-D convolution theorem, 1-D convolution and wrap around error, Basics of filtering in frequency domain, Visual analysis of DFT,Filtering in Frequency domain: Low pass filters, High pass filters, Laplacian filter, Unsharp Masking, High boost Filtering and HighFrequency-Emphasis Filtering ,Homomorphic filtering,bandpass filters, band reject filters, Notch pass filters, Notch reject filters etc.
Chapter: 10 Image segmentation **(10.1 to 10.4 of Textbook- Digital Image Processing by Gonzalez and Woods)** Fundamentals, Point, Line and Edge Detection, Thresholding, Region based segmentation.