MCAH202: ADVANCED DATABASE MANAGEMENT SYSTEMS

Hours/Week: 4 I.A. Marks: 30

Credits: 4 Exam. Marks: 70

Course Learning Objectives: Students will try to learn,

1. Basics of NoSQL databases, Relational Databases, Information Retrieval and XML databases.
2. The concepts of column databases, distributed database and data warehousing schemes
3. Various concepts of MongoDB and types of consistency.
4. Advance Databases, Convergent databases and Disruptive Databases.

Course Outcomes: After completing the course, the students will be able to,

CO1: Explore the concepts of NoSQL Databases.
CO2: Understand and use columnar and distributed database patterns.
CO3: Learn to use various Data models for a variety of databases.
CO4: Explore the relationship between Big Data and NoSQL databases
CO5: Work with NoSQL databases to analyze the big data for useful business applications.
CO6: Understands the concept of MongoDB and types of consistency.
CO7: Learn the concepts of Advance Databases, Convergent databases and Disruptive Databases.

UNIT-I **12Hrs.**

Database Revolutions- System Architecture- Relational Database- Database Design, Data Storage- Transaction Management- Data warehouse and Data Mining- Information Retrieval, Big Data evolution- CAP Theorem- Birth of NoSQL, Document Database, XML and XML Databases- JSON Document Databases- Graph Databases.

UNIT-II **12Hrs.**

Column Databases, Data Warehousing Schemes- Columnar Alternative- Sybase IQ- CStore and Vertica - Column Database Architectures, SSD and In-Memory Databases, In-Memory, Databases- Berkeley Analytics Data Stack and Spark.

UNIT-III **12Hrs.**

Distributed Database Patterns, Distributed Relational Databases- Non-relational Distributed Databases- MongoDB - Sharing and Replication- HBase- Cassandra- Consistency Models, Types of Consistency- Consistency MongoDB- HBase Consistency- Cassandra Consistency.

UNIT-IV **12Hrs.**

Data Models and Storage- SQL- NoSQL APIs- Return SQL - Advance Databases PostgreSQL- Riak- CouchDB- NEO4J- Redis- Future Databases— Revolution Revisited- Counter revolutionaries- Oracle HQ- Other Convergent Databases- Disruptive Database Technologies.

REFERENCE BOOKS:

1. Abraham Silberschatz, Henry F. Korth, S. Sudarshan, "Database System Concepts", Sixth Edition, McGrawHill.
2. Guy Harrison, "Next Generation Databases",Apress, 2015.
3. Eric Redmond, Jim R Wilson, "Seven Databases in Seven Weeks", LLC. 2018.
4. Dan Sullivan, "NoSQL for Mere Mortals", Addison-Wesley, 2015.
5. Adam Fowler, "NoSQL for Dummies ", John Wiley & Sons, 2015.