JYOTI NIVAS COLLEGE AUTONOMOUS
SYLLABUS FOR 2021 BATCH AND THEREAFTER
PROGRAMME: BCA
SEMESTER: I - DATABASE MANAGEMENTSYSTEMS
COURSE CREDITS: 03 **NO. OF HOURS: 45**

COURSE OUTCOMES (COS):

1. Describe the fundamental elements of relational database management systems
2. Explain the basic concepts of file organization, relational data model, entity-relationship model, relationaldatabase design, relational algebra and SQL.
3. Design ER-models to represent simple database application scenarios
4. Convert the ER-model to relational tables, populate relational database and formulate SQL Queries on data and Improve the database design by normalization.
5. Able to implement transaction processing and concurrency control techniques

UNITI **10 Hours**

Databases and Database Users: Introduction, An example, Characteristics of the DatabaseApproach,AdvantagesofUsingDBMSApproach,DatabaseSystemConceptsandArchitecture: Data Models, Schemas, and Instances, Three-schema Architecture and DataIndependence,Database LanguagesandInterfaces,TheDatabaseSystemEnvironment.

UNITII **11 Hours**

Data Modeling Using Entity-Relationship Model: Entity Types, Entity Sets, Attributesand Keys, Relationship Types, Relationship Sets, Roles and Structural Constraints, WeakEntity Types, Refining the ER Design Company Database Diagrams, File organization andstorage, secondary storage devices, type of single level ordered index, multi-level indexes,indexeson multiplekeys, other types of indexes.

UNITIII **12 Hours**

Relational Model and Relational Algebra: Relational Model Concepts, Relational ModelConstraintsandRelationalDatabaseSchemas,UpdateOperations,UnaryRelationalOperations:SELECTandPROJECT,RelationalAlgebraOperationsfromSETTheory,**Binary Relational Operations:** JOIN and DIVISION, Additional Relational Operations,Examples of Queries in Relational Algebra. **Relational Database Design:** Anomalies in adatabase,functionaldependency,normalforms,losslessjoinanddependency,BCNF,normalization through synthesis, higher order normal forms. **SQL:** SQL Data Definition andDataTypes,SpecifyingConstraintsin SQL,SchemaChangeStatementsinSQL, BasicQueries in SQL, More Complex SQL Queries, Insert, Delete and Update Statements in SQL,Specifying Constraints as Assertion and Trigger, Views(Virtual Tables) in SQL, EmbeddedSQL,DynamicSQL.

UNIT-IV **12 Hours**

Introductiontotransactionprocessing:transactionandsystemconcepts,desirableproperties of transactions, transaction support in SQL. **Concurrency control techniques:**two-phase locking techniques, concurrency control based on timestamp ordering. Recoverytechniques:recoveryconcepts.

TextBooks:

1. ElmasriandNavathe:FundamentalsofDatabaseSystems,7thEdition,Addison-Wesley,2016.
2. Silberschatz,KorthandSudharshanDatabaseSystemConcepts,7thEdition,Tata McGraw Hill,2019.

ReferenceBooks:

1. C.J.Date,A.Kannan,S.Swamynatham:AnIntroductiontoDatabaseSystems,8th Edition,Pearson education,2009.
2. DatabaseManagementSystems:RaghuRamakrishnanandJohannesGehrke:3rd Edition,McGraw-Hill,2003.