

**Common Paper for (CSE,IT,AIDS,CSD,CYBER,ECE & EEE)**

***CONTINUOUS INTERNAL ASSESSMENT – I QUESTION BANK***

**23CD201 – DATABASE MANAGEMENT SYSTEMS**

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| **COURSE OUTCOMES** | | |
| C201.1 | Discuss the basic concepts and various data models used in database design | U |
| C201.2 | Illustrate Relational algebra, Relational calculus and Normalization. | AP |
| C201.3 | Write SQL commands and Subqueries with Constraints. | AP |
| C201.4 | Determine Appropriate transactions, views, cursors and triggers to perform the given task. | AP |
| C201.5 | Analyze database storage structures, query processing and recovery system. | A |

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| **PART A** | |
|  | Define Data Independence. |
|  | Distinguish between Instance and Schema. |
|  | Describe how ACID concepts are used in the database system. |
|  | Indicate any three entities along with their attributes as a part of Hospital Management System. Also identify primary key attributes. |
|  | Infer the role of attributes in an ER diagram |
|  | Discuss the role of weak entity. |
|  | Compare between 1:1 and 1: M relationship. |
|  | Give examples for Cartesian Product in Relational Algebra |
|  | Explain the purpose of the ∃ (Existential) quantifier in Relational Calculus |
|  | Illustrate the use of Database Management System (DBMS) |
|  | Identify two disadvantages of the file-based systems |
|  | Explain any two characteristics of DBMS |
|  | From the characteristics of a data model, infer how it influences the efficiency of database management. |
|  | Identify the major components of an ER diagram |
|  | Differentiate between Strong and Weak entity |
|  | Interpret the use of three-level architecture in DBMS |
|  | Examine the concept of a primary key and provide an example |
|  | Determine the role of Tuple Relational Calculus |

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| **Part B** | |
| 1. | Draw an ER diagram representing the entities (Courses, Course Offerings, Students, Instructors) and their relationships in the university Database system.   * Courses, including number, title, credits, syllabus, and prerequisites; * Course offerings, including course number, year, semester, section number, instructor(s), timings, and classroom; * Students, including student-id, name, and program; * Instructors, including identification number, name, department, and title. * Further, the enrollment of students in courses and grades awarded to students in each course they are enrolled for must be appropriately modeled. |
| 2. | Draw an Entity-Relationship (ER) Diagram for an e-commerce system with the following  **Customer:** A user who buys products. It includes CustomerID, Name, Email.  **Product:** An item available for sale. It includes ProductID, Name, Price.  **Order:** A customer's purchase. It includes OrderID, CustomerID, Order Date, Total\_Amount.  **Admin:** A user who manages the products in the system. It includes AdminID, Name.  **Note :**   * A Customer can place multiple Orders. * An Order can contain multiple Products, and a Product can appear in multiple Orders. * An Admin manages the Product. |
| 3. | Discuss the different types of data models and their benefits |
| 4. | Differentiate between DBMS and File System |
| 5. | Indicate the role of keys (Primary Key, Foreign Key, and Candidate Key) in ensuring data integrity in DBMS |
| 6. | Illustrate the three levels of data abstraction. |
| 7. | Describe the various types of attributes in DBMS with suitable examples. |
| 8. | Interpret the concept of Relational Algebra with suitable examples for each operation. |
| 9. | Describe the concept of referential integrity in relational databases. How do foreign keys enforce this integrity? |
| 10. | Explain the differences between Tuple Relational Calculus (TRC) and Domain Relational Calculus (DRC). Provide examples to illustrate their distinctions. |