

**DEPARTMENT:**

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| *Internal Assessment* | **I** | *Academic Year/Semester* | **2022-23 /IV/** |
| *Subject* | **CST204-Database Management**  **Systems** | *Branch* | Computer Science &  Engineering |
| *Date of Exam* | **dd/03/2023** | *Duration* | **120 Min** |
| *Starting time* | **9:30 am/2:00 pm** | *Max. Marks* | **60** |

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| **PART-A (*Answer all questions, each carries 3 marks*) Max Marks: 12** | | | | |
| ***Q.No*** |  | ***Marks*** | ***CO*** | ***Level*** |
| **1** | What are the parts of a domain, and how is it defined for an attribute in a database? | 3 | I | L1/L2 |
| **2** | Re-draw the ER diagram replacing the (min,max) notation with the conventional notation showing cardinality and participation | 3 | I | L1/L2 |
| **3** | What are the roles and responsibility of DBA ? | 3 | II | L1/L2 |
| **4** | What role does Relational Algebra play in Relational Database Management Systems (RDBMS)? | 3 | II | L1/L2 |

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| **PART-B (*Each question carries 12 marks)* Max Marks: 48** | | | | | | | | | |
| **5** | | a | | With the help of neat diagram explain 3 schema architecture | 4 | I | | L3 | |
| b | | For a car-insurance company whose customers has a Unique Customer\_id, Cust\_name, Address, Date of birth,age. A customer owns many cars, A car can be owned by a single customer .The car is identified by unique regn no, model, year & amount insured. A person as well as a car can be involved in zero to any number of accidents. The accident is recorded by a unique report number,location ,date & damage amount. Construct the E-R diagram mentioning all the attributes and also the cardinalities of relationship. | 8 | II | | L3 | |
| **OR** | | | | | | | | | |
| **6** | |  | | Explain the Role and Responsibility of a DBA | 4 | I | | L2/L3/L4 | |
|  | | Draw the Entity- Relationship Diagram (ERD) for the following scenario: A salesperson may manage many other salespeople. A salesperson is managed by only one salespeople. A salesperson can be an agent for many customers. A customer is managed by one salespeople. A customer can place many orders. An order can be placed by one customer. An order lists many inventory items. An inventory item maybe listed on many orders. An inventory item is assembled from many parts. A part may be assembled into many inventory items. Many employees assemble an inventory item from many parts. A supplier supplies many parts. A part may be supplied by different supplier. | 8 | II | | L3 | |
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| **7** | | a | | Explain the characteristics of the Database approach. How do these characteristics make the Database approach different from traditional file-based systems? | 6 | I | | L2 | |
| b | | Explain and differentiate types of attributes with the help of neat diagrams | 6 | II | | L3 | |
| **OR** | | | | | | | | | |
| **8** | | a | | Discuss the various types of DBMS architecture. Provide a detailed explanation of each type, accompanied by appropriate diagrams. | 6 | II | | L3 | |
| b | | When is the concept of a weak entity used in data modeling? Define the terms identifying relationship, and partial key. | 6 |  | |  | |
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| **9** | | a | | Explain the advantages of using a database system over a file system. Compare and contrast the two systems ? | 6 | II | | L2/L3/L4 | |
| b | | With the help of a neat diagram, explain the 3-schema architecture in Relational Database Management Systems (RDBMS). How does this architecture provide a framework for data independence and what are the advantages of using it? |  |  | |  | |
| **OR** | | | | | | | | | |
| **10** | **a** | | What is the difference between a super key, candidate key, primary key, and alternate key in a database?. Explain with a suitable example ? | | 6 | | II | | L2/L3/L4 |
| **b** | | What are the different types of join operations in a database management system ? Provide diagrams to illustrate each join. | |  | |  | |  |
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| **11** | **a** | | Synthesize below ER diagram to relational schema ? | | 12 | | II | | L2/L3/L4 |
| **b** | | Describe the different types of integrity constraints that can be implemented in a database management system. | |  | |  | |  |
| **OR** | | | | | | | | | |
| **12** |  | | What is the Cartesian product in a database management system, and how is it used to combine data from multiple tables? | | 12 | | II | | L2/L3/L4 |
|  | | Create two tables in a database management system, and establish a relationship between them using SQL commands. Set appropriate constraints on the tables to ensure data consistency and accuracy.  Assume we have two tables: Employees and Departments. We want to establish a relationship between these tables such that each employee is associated with a department. | |  | |  | |  |

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| **Course Outcomes (CO):** |
| **CO I :** |
| **CO II :** |
| **Bloom’s Taxonomy Level:** |
| L1: Remember, L2: Understand, L3:Apply L4:Analyze |