**CS1**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **January, 2024** | **Common to EC, EI, EE & CE** | | |
| **Seventh Semester** | **Database Management Systems** | | |
| **Time:** Three Hours | | **Maximum:** 70 Marks | |
| ***Answer question 1 compulsory.*** | | | **(14X1 = 14Marks)** |
| ***Answer one question from each unit.*** | | | **(4X14=56 Marks)** |
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|  |  |  | CO | BL | M |
| 1 | a) | List out the applications of DBMS. | CO1 | L4 | 1M |
|  | b) | What are the disadvantages of file system? | CO1 | L1 | 1M |
|  | c) | Who are the actors behind the scene? | CO1 | L1 | 1M |
|  | d) | List out DML commands. | CO2 | L4 | 1M |
|  | e) | Define Cardinality of a Relation. | CO2 | L1 | 1M |
|  | f) | Compare procedural and non-procedural DML. | CO2 | L2 | 1M |
|  | g) | Classify the different constraints in relational model. | CO2 | L2 | 1M |
|  | h) | What is Normalization? | CO3 | L1 | 1M |
|  | i) | Define Functional Dependency. | CO3 | L1 | 1M |
|  | j) | Distinguish prime and non-prime attributes. | CO3 | L4 | 1M |
|  | k) | What is Natural Join? Give an example. | CO3 | L1 | 1M |
|  | l) | Define Schedule. | CO4 | L1 | 1M |
|  | m) | What is Timestamp? | CO4 | L1 | 1M |
|  | n) | Classify the desirable properties of transaction. | CO4 | L4 | 1M |
| **Unit-I** | | | | | |
| 2 | a) | Demonstrate Three schema architecture and Data independence in detail. | CO1 | L2 | 7M |
|  | b) | Explain the characteristics of Database approach. | CO1 | L2 | 7M |
| **(OR)** | | | | | |
| 3 | a) | Design an ER Model for the following Company Database.  The company is organized into **DEPARTMENT**s. Each department has a name, number and an employee who *manages* the department and keep track of the start date of the department manager. A department may have several locations.  Each department *controls* a number of **PROJECT**s. Each project has a unique name, unique number and is located at a single location.  Store each **EMPLOYEE**’s social security number, address, salary, sex, and birthdate.  Each employee *works for* one department but may *work on* several projects.  Keep track of the number of hours per week that an employee currently works on each project and also keep track of the *direct supervisor* of each employee.  Each employee may *have* a number of **DEPENDENT**s.  For each dependent, keep track of their name, sex, birthdate, and relationship to the employee. | CO1 | L6 | 7M |
|  | b) | Modify the Company Database by introducing following relationships.  WORKS\_FOR (between EMPLOYEE, DEPARTMENT)  MANAGES (also between EMPLOYEE, DEPARTMENT)  CONTROLS (between DEPARTMENT, PROJECT)  WORKS\_ON (between EMPLOYEE, PROJECT)  SUPERVISION (between EMPLOYEE (as subordinate), EMPLOYEE (as supervisor))  DEPENDENTS\_OF (between EMPLOYEE, DEPENDENT) | CO1 | L6 | 7M |
| **P.T.O**  **CS1** | | | | | |
| **Unit-II** | | | | | |
| 4 |  | Explain in detail about Relational Model Constraints and its violations with examples. | CO2 | L2 | 14M |
| **(OR)** | | | | | |
| 5 | a) | Explain in detail about different type of Join operations with the help of an example. | CO2 | L2 | 7M |
|  | b) | What is aggregate function? Explain all aggregate functions with the help of an example. | CO2 | L1 | 7M |
| **Unit-III** | | | | | |
| 6 | a) | Given a relation R(A,B,C,D) and following Functional Dependencies .  A🡪BCD  BC🡪AD  D🡪B  Identify the Strongest Normal Form that the relation R is in. | CO3 | L3 | 7M |
|  | b) | What is Normalization? Explain the following with an example.  2NF ii. 3NF iii. BCNF | CO3 | L1 | 7M |
| **(OR)** | | | | | |
| 7 | a) | Explain Dependency Preserving Decomposition. | CO3 | L2 | 7M |
|  | b) | What is multivalued dependency? Explain 4NF and 5NF. | CO3 | L1 | 7M |
| **Unit-IV** | | | | | |
| 8 | a) | Define transaction. Illustrate a state diagram and discuss the typical states that a transaction goes through during execution. | CO4 | L2 | 7M |
|  | b) | Discuss the following.  The Lost Update Problem.  The Temporary Update (or Dirty Read) Problem. | CO4 | L6 | 7M |
| **(OR)** | | | | | |
| 9 | a) | Explain the following.  Conflict Serializability  View Serializability | CO4 | L2 | 7M |
|  | b) | Explain Basic Timestamp based Concurrency Control Algorithm. | CO4 | L2 | 7M |

