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**PRESIDENCY UNIVERSITY**

**Bengaluru**

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| **End - Term Examinations –JANUARY 2025** |
| **Date:** 16 – 01- 2025 **Time:** 01:00 pm – 04:00 pm |

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| **School:** SOCSE | **Program:** B. Tech –COM/CSE/CAI/CEI | |
| **Course Code:** CSE3156 | **Course Name:** Database Management Systems | |
| **Semester**: III | **Max Marks**: 100 | **Weightage**: 50% |

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| **CO - Levels** | **CO1** | **CO2** | **CO3** | **CO4** | **CO5** |
| **Marks** | 14 | 14 | 36 | 36 |  |

**Instructions:**

1. *Read all questions carefully and answer accordingly.*
2. *Do not write anything on the question paper other than roll number.*

**Part A**

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| **Answer ALL the Questions. Each question carries 2marks. 10Q x2M=20M** | | | | |
| **1** | What is Program data independence and Logical data independence? | **2 Marks** | **L1** | **CO1** |
| **2** | Define Total participation and Partial participation. | **2 Marks** | **L1** | **CO1** |
| **3** | Define views with example. | **2 Marks** | **L1** | **CO2** |
| **4** | What is Candidate key? Give an example. | **2 Marks** | **L1** | **CO2** |
| **5** | What is the need of normalization? | **2 Marks** | **L1** | **CO3** |
| **6** | Given R(A,B,C,D,E)  A->B  B->C  C->D  D->E  Find the closure of C, BC, ABC, | **2 Marks** | **L1** | **CO3** |
| **7** | What is lossless decomposition and dependency preserving decomposition? | **2 Marks** | **L1** | **CO3** |
| **8** | What is spatial database? List any two characteristics of spatial databases. | **2 Marks** | **L1** | **CO4** |
| **9** | Define commit point of a transaction. | **2 Marks** | **L1** | **CO4** |
| **10** | What is System log file? Name any two types of records in log file. | **2 Marks** | **L1** | **CO4** |

**Part B**

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| --- | --- | --- | --- | --- | --- | --- |
| **Answer the Questions. Total 80 Marks.** | | | | | | |
| **11.** | **a.**  **b.** | **univ.jpg**  Consider the above ER diagram representing a University database:   1. **Identify all the strong and weak entities**. 2. **List the attributes** associated with each entity. 3. Determine the **type of attribute** for all the entities (e.g., simple, composite, derived, key, multi-valued etc). 4. **Describe participation constraint** between the entities. 5. Identify the **type of relationship** between entities.   Describe update, drop, truncate and alter commands in SQL. | **10 Marks**  **10Marks** | **L2**  **L2** | **CO1**  **CO2** | |
| **Or** | | | | | | |
| **12.** | **a.**  **b.** | Explain the following relational algebra operations with an example.   1. Rename 2. Set Difference 3. Theta Join 4. Full Outer Join   Illustrate SQL logical operators with SQL query example. | **10 Marks**  **10 Marks** | **L2**  **L2** | | **CO1**  **CO2** |
|  |  |  |  |  | |  |
| **13.** | **a.** | Consider Relation schema R = {A, B, C, D, E, F} with the following functional dependencies :  AB -> C  C-> D  D -> BE  E -> F  F -> A   1. Identify prime and non-prime attributes. 2. Find candidate keys 3. Find the total number of super keys in the relation R | **20 Marks** | **L3** | | **CO3** |
| **Or** | | | | | | |
| **14.** | **a.** | Consider the table and functional dependency given below:   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **Stu\_id** | **Stu\_Name** | **Phone\_No** | **Course\_Code** | **Course\_name** | **Marks** | | **1** | John Basu | 88833,98982 | 1 | AI | 40 | | **2** | Nithin Reddy | 89340,98874 | 1 | AI | 40 | | **3** | Raga Manasa | 91223,99883,33498 | 3 | CC | 60 |   Functional Dependency:  **{**Stu\_id->Course\_Code, Course\_Code->Course\_name, (Stu\_id,Course\_Code->Marks)}  Normalize the given table into 1NF, 2NF, 3NF and BCNF along with justifying the reason to decompose the table. | **20 Marks** | **L3** | | **CO3** |

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| **15.** | **a.**  **b.** | Describe the need for recovery control in transaction processing system.  Construct the states through which a transaction passes during execution and explicate the desirable properties of any transaction. | **10 Marks**  **10 Marks** | **L3**  **L3** | **CO4**  **CO4** |
| **Or** | | | | | |
| **16.** | **a.**  **b.** | Construct the examples to brief summary update problem and write-write conflict problem in transaction.  Illustrate the advantages and disadvantages of deductive database. | **10 Marks**  **10 Marks** | **L3**  **L3** | **CO4**  **CO4** |

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| **17.** | **a.**  **b.** | Explain the following terms:   1. Trivial Functional Dependency 2. Multi-valued Functional Dependency 3. Augmentation Inference Rule 4. Join Dependency 5. Transitivity Rule   Describe the features and applications of temporal database. | **10 Marks**  **10 Marks** | **L2**  **L2** | **CO3**  **CO4** |
| **Or** | | | | | |
| **18.** | **a.**  **b.** | Describe the unexpected conditions that are caused by redundancy in the database.  Explain the necessary characteristics a system must satisfy to be considered as an Object oriented DBMS. | **10 Marks**  **10 Marks** | **L2**  **L2** | **CO3**  **CO4** |

**\*\*\*\*\* BEST WISHES \*\*\*\*\***