



**END SEMESTER EXAMINATION, DECEMBER 2023**  
**S.E. SEMESTER III (CBCGS-HME 2023)**

<b>Branch:</b>	<b>COMP</b>	<b>Q.P. Code:</b>	<b>R235404-2</b>
<b>Subject:</b>	<b>Database Management System</b>	<b>Duration:</b>	<b>2 hours</b>
<b>Subject Code:</b>	<b>PCC- CS 301</b>	<b>Max. Marks:</b>	<b>60</b>

- Instructions:**
1. All sections are compulsory
  2. Figures to the right indicate full marks.
  3. Assume suitable data if necessary and state the assumptions clearly.

**Section-I Short Answer Questions (Answer any 05 questions out of 06) (10 Marks)**

Q. No.		Mark s	CO	RBT Level	PI
1	Describe Data Abstraction in the context of a database and its importance.	2	1	AN	3.1.1
2	Explain the significance of Cardinality in representing Relationships.	2	2	R	1.1.1
3	Provide an example of an aggregate function and explain how the GROUP BY clause is used in conjunction with it.	2	3	R	1.1.1
4	Describe the purpose and benefits of using SQL JOIN operations. Provide an example of when you would use an INNER JOIN.	2	4	U	1.3.1
5	Describe the concept of a Multi-valued Dependency in Level 4 (L4) of dependency levels. Provide a simple example to clarify the notion of multi-valued dependencies.	2	5	C	2.1.3
6	List and briefly describe two common types of constraints that are used to maintain data integrity in a database.	2	3	AN	3.1.1

**Section-II Descriptive Answer Questions (Answer any 04 out of 06) (20 Marks)**

1	Discuss three key advantages of using a DBMS over traditional File Processing Systems.	5	1	AN	3.1.1
2	Compare and contrast Single-Valued and Multi-Valued Attributes with examples.	5	2	U	1.3.1
3	Compare and contrast string operations, set operations, and join operations in SQL. Provide examples of each type of operation and explain how they contribute to query formulation and result manipulation.	5	3	AN	3.1.1
4	Write a SQL query that <u>selects the five employees with the highest salaries</u> from a table named "EmployeeData." <u>Additionally, provide a brief explanation of how you optimized this query for performance.</u>	5	4	AN	3.1.1
5	Consider a database schema for an <u>online bookstore</u> . Explain how you would design and normalize <u>the tables</u> to ensure they are in at least Third Normal Form (3NF). Provide specific examples of tables, attributes, and dependencies in your design.	5	5	AN	3.1.1
6	Imagine you are designing a database system for a financial institution. Describe in detail the strategies and protocols you would implement for transaction management, concurrency control, and recovery to ensure data integrity and high availability.	5	6	AN	3.1.1



**Section-III Long Answer Question (Answer any 03 out of 05)**

				Case Marks)	
1	Create ER diagram Ticket booking system for Railways.	10	1	C	1
2	Discuss the challenges of converting an ER Diagram into a well-structured Relational Schema. Provide strategies to address these challenges.	10	2	AN	3.1.1
3	Explain the concept of the transaction management in detail	10	6	U	1.3.1
4	Evaluate and state the SQL views with suitable real life example.	10	4	E	2.1.3
5	Explain in detail the concept of Normalization and state its types with suitable examples.	10	5	C	2.1.3