

Basavarajeswari Group of Institutions

**2024 SCHEME**

# BALLARI INSTITUTE OF TECHNOLOGY & MANAGEMENT

(Autonomous Institute under Visvesvaraya Technological University, Belagavi)

USN 

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Course Code 

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## First Semester MCA Degree Examinations, April 2025

# DATABASE MANAGEMENT SYSTEMS

Duration: 3 hrs

Max. Marks: 100

*Note:* 1. Answer any FIVE full questions, choosing ONE full question from each module.  
2. Missing data, if any, may be suitably assumed

<u>Q. No</u>	<u>Question</u>	<u>Marks</u>	<u>(RBTL:CO: PI)</u>
<b><u>MODULE – 1</u></b>			
1	a. Define database. Explain the database system environment with a neat diagram.	10	(2:1:1.2.1)
	b. Describe about database users briefly.	10	(2:1:1.3.2)
(OR)			
2.	a. With a neat diagram, explain three schema architecture of DBMS with its data independence.	10	(2:1:1.3.4)
	b. Explain briefly about database languages and interfaces.	10	(2:1:1.4.1)
<b><u>MODULE – 2</u></b>			
3.	a. Explain different types of keys and relational operators with an example.	10	(2:2:2.1.1)
	b. Explain the different symbols used in ER – diagram and draw company database using the ER-diagram.	10	(3:2:2.2.1)
(OR)			
4.	a. With a neat diagram, explain the conceptual data modelling for a database system.	10	(3:2:2.3.2)
	b. Explain briefly about tuple relational calculus and domain relational calculus.	10	(2:2:2.4.1)
<b><u>MODULE – 3</u></b>			
5.	a. Write short notes on data types and aggregate functions in SQL.	10	(2:3:3.1.1)
	b. Explain views and procedures in SQL along with examples.	10	(3:3:3.2.2)
(OR)			
6.	a. Explain with an example, how to retrieve the records with six clauses in SQL.	10	(3:3:3.4.3)
	b. Explain PL/SQL with an example and mention the differences between SQL and PL/SQL.	10	(3:3:3.3.1)
<b><u>MODULE – 4</u></b>			
7.	a. Define functional dependency. Explain different types of functional dependencies with examples.	10	(2:4:4.1.1)
	b. Explain 2NF and 3NF with an example.	10	(3:4:4.2.2)

(OR)

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|-----------|-----------|--|-----------|--------------------|
| <b>8.</b> | <b>a.</b> | Define normalization. Explain the features of normalization. | <b>10</b> | <b>(2:4:4.3.2)</b> |
|           | <b>b.</b> | Explain BCNF and 4NF with an example.                        | <b>10</b> | <b>(3:4:4.4.1)</b> |

**MODULE – 5**

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|-----------|-----------|--|-----------|--------------------|
| <b>9.</b> | <b>a.</b> | What is transaction processing? Why concurrency control is needed and explain different types of failures. | <b>10</b> | <b>(2:5:5.4.1)</b> |
|           | <b>b.</b> | Explain two – phase locking technique for concurrency control.   | <b>10</b> | <b>(2:5:5.1.2)</b> |

**(OR)**

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|------------|-----------|---|-----------|--------------------|
| <b>10.</b> | <b>a.</b> | Explain transaction states and operations in detail.              | <b>10</b> | <b>(2:5:5.3.1)</b> |
|            | <b>b.</b> | Explain different multi – version concurrency control techniques. | <b>10</b> | <b>(2:5:5.4.1)</b> |

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