

**BALLARI INSTITUTE OF TECHNOLOGY & MANAGEMENT**

(Autonomous Institute under Visvesvaraya Technological University, Belagavi)

USN Course Code          

Third Semester MBA Degree Examinations, February 2026

**DATABASE MANAGEMENT SYSTEM**

Duration: 3 hrs

Max. Marks: 100

- Note:* 1. Answer any **FOUR** full questions from Question No. 1 to 7.  
 2. Question No. 8 is compulsory  
 3. Missing data, if any, may be suitably assumed

<u>Q. No</u>	<u>Question</u>	<u>Marks</u>	<u>(RBTL:CO:PO)</u>
1	a. <b>Explain</b> the roles and responsibilities of actors on the scene in a DBMS environment with suitable examples.	03	(3:1:1)
	b. <b>Explain</b> the different database languages (DDL, DML, DCL) with suitable examples.	07	(3:1:1)
	c. <b>Analyse</b> the advantages of the database approach compared to traditional file processing systems.	10	(4:1:1)
2.	a. <b>Illustrate</b> the use of different data models in representing real-world data with suitable examples.	03	(3:2:2)
	b. <b>Discuss</b> the naming conventions used for ER schema diagram with symbol, meaning and description.	07	(3:2:2)
	c. <b>Construct</b> an ER diagram for a <b>College Management System</b> showing entities, relationships, and constraints.	10	(5:2:2)
3.	a. <b>Explain</b> the relational model and illustrate its key components with examples.	03	(3:2:2)
	b. <b>Describe</b> the different update operations in a relational database (Insert, Delete, Update). How do they impact constraints?	07	(3:2:2)
	c. <b>Discuss</b> the various phases involved in database design process.	10	(3:2:2)
4.	a. <b>Explain</b> the purpose of primary key and foreign key in relational databases.	03	(3:3:3)
	b. <b>Describe</b> the creation and usage of SQL views with examples.	07	(3:3:3)
	c. <b>Explain</b> the SQL retrieval clauses used in the SELECT statement: SELECT, FROM, WHERE, GROUP BY, HAVING, ORDER BY with syntax and suitable examples.	10	(3:3:3)
5	a. <b>Explain</b> the need for normalization in relational database design.	03	(3:4:4)
	b. <b>Describe</b> second and third normal forms with examples.	07	(3:4:4)
	c. <b>Explain</b> multivalued dependencies with Fourth Normal Form (4NF) and join dependencies with Fifth Normal Form (5NF) in detail.	10	(4:4:4)

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|----|--|-----------|----------------|
| 6. | a. <b>Explain</b> the concept of a transaction in DBMS with an example.                          | <b>03</b> | <b>(3:5:5)</b> |
|    | b. <b>Explain</b> system concepts in transaction processing with neat state transaction diagram. | <b>07</b> | <b>(3:5:5)</b> |
|    | c. <b>Explain</b> serializability and its importance in DBMS.                                    | <b>10</b> | <b>(4:5:5)</b> |
| 7. | a. <b>Illustrate</b> the ACID properties of transactions.  | <b>03</b> | <b>(3:5:5)</b> |
|    | b. <b>Differentiate</b> between recoverable and non-recoverable schedules.                       | <b>07</b> | <b>(4:5:5)</b> |
|    | c. <b>Illustrate</b> Two-Phase Locking (2PL) and <b>analyze</b> how it controls concurrency.     | <b>10</b> | <b>(4:5:5)</b> |

8.

### Case Study

**Consider the schema for Movie Database:**

ACTOR (Act\_id, Act\_Name, Act\_Gender)

DIRECTOR (Dir\_id, Dir\_Name, Dir\_Phone)

MOVIES (Mov\_id, Mov\_Title, Mov\_Year, Mov\_Lang, Dir\_id)

MOVIE\_CAST (Act\_id, Mov\_id, Role)

RATING (Mov\_id, Rev\_Stars)

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|----|---|-----------|----------------|
| a. | <b>Create</b> the above tables with appropriate primary and foreign key constraints and <b>Insert</b> suitable sample data. | <b>08</b> | <b>(3:3:7)</b> |
| b. | <b>Apply</b> the SQL query to the above created tables:   | <b>12</b> | <b>(3:3:7)</b> |
|    | (i) List all actors who acted in a movie <b>before 2000</b> and also in a movie <b>after 2015</b>                           |           |                |
|    | (ii) Display the movie titles along with the <b>highest rating</b> received by each movie. Sort the result by movie title.  |           |                |
|    | (iii) <b>Update</b> the rating of all movies directed by 'RAJMOULI' to 5.   |           |                |

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