

Basavarajeswari Group of Institutions  
**BALLARI INSTITUTE OF TECHNOLOGY & MANAGEMENT**  
 (Autonomous Institute under Visvesvaraya Technological University, Belagavi)

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Course Code 

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**Third Semester MBA Degree Examinations, March/April 2024**  
**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. Write a note on actors on the scene.	03	(1 : 1 : 2)
	b. Discuss the main characteristics of database approach over the file processing approach.	07	(2 : 1 : 2)
	c. Draw the block diagram and discuss the database system environment	10	(2 : 1 : 2)
2.	a. Distinguish between primary key and foreign key.	03	(2 : 1 : 2)
	b. Discuss the different types of user-friendly interfaces of DBMS	07	(2 : 1 : 2)
	c. Explain Three-Schema Architecture with a neat diagram.	10	(2 : 1 : 2)
3.	a. List Data Definition Language (DDL) and Data Modification Language (DML) commands used in SQL.	03	(1 : 2 : 1)
	b. Identify different types of constraints which are violated during the INSERT operation with examples.	07	(3 : 2 : 1)
	c. Write and explain an ER-to-Relational Mapping Algorithm with example.	10	(1 : 2 : 1)
4.	a. Discuss the different forms of ALTER command with syntax and examples.	03	(2 : 3 : 2)
	b. Explain view creation and displaying in SQL with syntax and example.	07	(2 : 3 : 2)
	c. <b>Consider the schema for Movie Database:</b> 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) Solve queries in SQL to i. List the titles of all movies directed by 'Hitchcock'. ii. Find the movie names where one or more actors acted in two or more movies. iii. List all actors who acted in a movie before 2000 and also in a movie after 2015(use JOIN operation). iv. Find the title of movies and number of stars for each movie that has at least one rating and find the highest number of stars that movie received. Sort the result by movie title. v. Update rating of all movies directed by 'RAJMOULI' to 5.	10	(3 : 3 : 2)

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|----|----|--|----|------------|
| 5. | a. | Define normalization. Why normalization is important in designing databases.                                   | 03 | (1 :4 : 1) |
|    | b. | List and explain informal design guidelines for relational databases   | 07 | (1 :4 : 1) |
|    | c. | Explain 1NF, 2NF and 3NF with suitable examples for each   | 10 | (2 :4 : 1) |
| 6. | a. | List properties of Transaction.  | 03 | (1 :5 : 2) |
|    | b. | Demonstrate with example, why concurrency control is required?   | 07 | (2 :5 : 2) |
|    | c. | Demonstrate the state transition diagram of the typical states that transaction goes through during execution. | 10 | (3 :5 : 2) |
| 7. | a. | Write algorithm to determine the closure of X under F  | 03 | (1 :5 : 2) |
|    | b. | Explain the three phases of the ARIES recovery model.  | 07 | (2 :5 : 2) |
|    | c. | Discuss lock table management in two phase locking concurrency control   | 10 | (2 :5 : 2) |

8. **Case Study**

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|----|---|----|------------|
| a. | <b>Consider the following schema for Order Database:</b>                                      | 10 | (3 :3 : 2) |
|    | SALESMAN (Salesman_id, Name, City, Commission)  |    |            |
|    | CUSTOMER (Customer_id, Cust_Name, City, Grade, Salesman_id)                                   |    |            |
|    | ORDERS (Ord_No, Purchase_Amt, Ord_Date, Customer_id, Salesman_id)                             |    |            |
|    | i. Identify <i>entities</i> ii. Identify <i>primary keys</i> and <i>foreign keys</i>          |    |            |
|    | iii. Construct <i>Schema-Diagram</i> iv. Construct <i>ER-Diagram</i>                          |    |            |
| b. | <b>Consider the schema for Sailors Database:</b>  | 10 | (3 :3 : 2) |
|    | Sailors(sid: integer, sname: string, rating: integer, age: real);                             |    |            |
|    | Boats(bid: integer, bname: string, color: string);  |    |            |
|    | Reserves (sid: integer, bid: integer, day: date).   |    |            |
|    | Solve queries in SQL to   |    |            |
|    | (i) Find the names of sailors who have reserved at least one boat.                            |    |            |
|    | (ii) Find the ids and names of sailors who have reserved two different boats on the same day. |    |            |
|    | (iii) Count the number of different sailor names.   |    |            |
|    | (iv) Find all information of sailors who have reserved boat number 101.                       |    |            |
|    | (v) Find the average age of sailors for each rating level that has at least two sailors       |    |            |

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