Enrolment No/Seat No.: _____

R.N.G.PATEL INSTITUTE OF TECHNOLOGY-RNGPIT

(An Autonomous Institute U/s UGC Act 1956)

IMSc-IT SEMESTER-II, SEMESTER END EXAMINATION – WINTER 2025

SUBJECT CODE: 1BS205 **DATE: 12-01-2026**

SUBJECT NAME: DATABASE MANAGEMENT SYSTEM

TIME: 11:00 AM to 01:30 PM **TOTAL MARKS: 70**

Instructions

1. It is **compulsory** for students to write **Enrolment No. /Seat No.** on the question paper.
2. Write answers of **Section A** and **Section B** in **separate answer books**.
3. Attempt all questions from both **Section A** and **Section B**.
4. Each section carries **35 marks**, with a total of **70 marks** for the examination.
5. The figures to the right of each question indicate full marks, make suitable assumptions with justification.
6. BL - Bloom's Taxonomy Levels (R-Remember, U-Understanding, A –Application, N –Analyze, E – Evaluate, C -Create), CO - Course Outcomes.

SECTION A

		Marks	BL	CO
Q.1	**Multiple-Choice Questions**	**[05]**		
(a)	Which ACID property ensures that a transaction brings the database from one valid state to another? **(i)** Atomicity **(ii)** Consistency **(iii)**Isolation **(iv)** Durability	**1**	**R**	**2**
(b)	Which of the following users is responsible for defining access permissions and maintaining database security? **(i)** End User **(ii)** Application Programmer **(iii)**Database Administrator **(iv)**System Analyst	**1**	**R**	**2**
(c)	Which symbol is used to represent an entity in an ER diagram? **(i)** Oval **(ii)** Diamond **(iii)**Rectangle **(iv)**Line	**1**	**R**	**3**
(d)	Which data model represents data in the form of tables? **(i)** Hierarchical model **(ii)** Relational model **(iii)**ER model **(iv)**Network model	**1**	**R**	**3**

(e) Which database supports objects, classes, inheritance, and encapsulation? **1 R 4**

(i) Relational database **(ii)** Object-oriented database

(iii) Hierarchical database **(iv)**Network database

Q.2 Attempt Any Two **[10]**

(a) Describe the database architecture with a diagram. **5 U 2**

(b) State the definition of a transaction in DBMS. Why is it required? **5 R 2**

(c) Explain ACID properties of a transaction in DBMS with suitable examples. **5 U 2**

Q.3 Attempt Any Two **[10]**

(a) Explain different types of constraints in the ER model. **5 R 3**

(b) Draw and explain an ER diagram for a Library Management System **5 A 3**

(c) Explain different types of data models used in DBMS. **5 U 3**

Q.4 Attempt Any Two **[10]**

(a) What is a Parallel Database? Explain its architecture and advantages. **5 R 4**

(b) State the concept of a multimedia database. **5 R 4**

(c) What is an XML Database? Explain its applications. **5 U 4**

SECTION B

		Marks	BL	CO
Q.5	**Multiple-Choice Questions**	**[05]**		
(a)	Which SQL constraint ensures that all values in a column are different?	**1**	**U**	**5**
	(i) NOT NULL **(ii)** PRIMARY KEY **(iii)** UNIQUE KEY **(iv)** FOREIGN KEY			
(b)	In the "View of Data," which level describes how the data is actually stored in the database?	**1**	**U**	**1**
	(i) External Level **(ii)** Conceptual Level **(iii)** Physical Level **(iv)** Logical Level			
(c)	Which data model organizes data into a tree-like structure?	**1**	**R**	**1**
	(i) Relational Model **(ii)** Hierarchical Model **(iii)** Network Model **(iv)** Entity-Relationship Model			
(d)	Which type of database is designed to handle non-structured data and does not strictly follow the tabular schema of relational databases?	**1**	**R**	**5**
	(i) XML Database **(ii)** NoSQL Database **(iii)** Temporal Database **(iv)** Object-Oriented Database			
(e)	To remove a specific record from the `EMP` table (e.g., employee_id 105), which command should be used?	**1**	**U**	**5**
	(i) REMOVE FROM EMP WHERE empid = 105; **(ii)** DROP FROM EMP WHERE empid = 105; **(iii)** DELETE FROM EMP WHERE empid = 105; **(iv)** TRUNCATE EMP WHERE empid = 105;			
Q.6	**Attempt Any Two**	**[10]**		
(a)	What is DBMS? Explain Characteristics of DBMS.	**5**	**R**	**1**
(b)	List and Explain ACID Properties.	**5**	**U**	**1**
(c)	Explain Instance and Schema in details.	**5**	**U**	**1**
Q.7	**Attempt Any Two**	**[10]**		
(a)	List and explain DML statements with suitable examples.	**5**	**R**	**5**

(b)	Explain any two string function used in SQL with example.	**5**	**U**	**5**
(c)	What is difference between Drop and Delete Command in SQL?	**5**	**U**	**5**

Q.8 Attempt Any Two **[10]**

(a)	Draw an ER Diagram for banking system with 5 entities and 5 attributes for each entity. Specify the cardinality ratio on each of the relationships existing between entities.	**5**	**A**	**5**
(b)	Explain Client-server architecture of Database System.	**5**	**U**	**5**
(c)	Explain primary key and foreign key with example.	**5**	**U**	**5**

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