



VIT

Vellore Institute of Technology
(Deemed to be University under section 3 of U.G.A. Act, 1956)

REG.NO.:

SCHOOL OF COMPUTER SCIENCE ENGINEERING AND INFORMATION SYSTEMS
CONTINUOUS ASSESSMENT TEST - I
WINTER SEMESTER 2025-2026

SLOT: A2+TA2

Programme Name & Branch : B. Tech IT
Course Code and Course Name : BITE302L- Database Systems
Faculty Name(s) : Prof. Bimal Kumar Ray, Prof. Tapan Kumar Das,
Prof. Jayaram Reddy A, Prof. Karthikeyan J
Class Number(s) : VL2025260502762, 2764, 2767, 2770
Date of Examination : 27.01.2026
Exam Duration : 90 minutes **Maximum Marks: 50**

General instruction(s):

- Answer All Questions
- CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)
- Course Outcomes
CO1- Identify the basic concepts of databases and various data models used in DB design
CO2-Design conceptual models to represent simple database application scenarios
CO4- Populate and query a database using SQL and PL/SQL

Q. No	Question	M	CO	BL
1.	a) Why would you choose a database system instead of simply storing data in operating system files? When would it make sense not to use a database system? b) Explain different types of database languages (DDL, DML, DCL) with suitable examples.	5 5	1	2
2.	Explain the three-level (three-schema) architecture of a DBMS. Highlight the difference between external, internal, and conceptual schemas. How are these different schema layers related to the concepts of logical and physical data independence? Justify with the help of an example.	10	1	2
3.	Consider Hotel Reservation System with Services A luxury hotel wants to develop a database system that manages guest reservations, room details, payments, and additional hotel services such as restaurant dining, spa treatments, and laundry services. The system should allow guests to use multiple services during their stay and track service usage and billing. The data requirements are as follows. Each guest has a unique guest ID, personal details (Name, Address), and contact information. The hotel contains many rooms, each with a unique room number, type, price per night, and status. A guest can make multiple reservations, but each reservation belongs to only one guest. Each reservation is for one room, and a room can be reserved multiple times on different dates. The hotel offers multiple services (restaurant, spa, laundry, gym, etc.). A guest can use multiple services during a reservation, and each service can be used by many guests. The system must record the date,	10	2	3



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	quantity/duration, and cost of each service used. Each reservation has one payment, which includes room charges and service charges. Draw an ER diagram for the above requirements.			
4.	a) Design a generalization-specialization hierarchy for the student. Students are categorized as postgraduate and undergraduate. A student in the university has a registration number and a name. Only postgraduate students have supervisors. Undergraduates accumulate points through their coursework. Justify your placement of attributes at each level of the hierarchy. Explain why they should not be placed at a higher or lower level. Represent EER constraints in the diagram and indicate the necessary constraints on the diagram. b) Explain disjoint and overlapping constraints with examples. Further explain the concept of category (union) with a suitable diagram.	5	2	4
5.	Based on the following relational database, you are required to formulate the suitable SQL Query for the following questions. EMPLOYEE (EId, EName, Salary, DOJ, Email, Company_Name, City) Write the SQL syntax for the following queries. (2×5) a) Create the Employee table with appropriate primary key b) Add the constraints to already created EMPLOYEE table such that EName cannot be blank and city must be of Bangalore or Chennai or Mumbai. c) List the details of the employees who have been earning salary less than 50000 and have not provided their email-id. d) Give a salary hike of 20% to the employees working in "JP Morgan". e) List the employee names in alphabetical order who have joined after 2019 and are from 'Mumbai'.	10	4	3
