Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

SCHOOL OF COMPUTER SCIENCE ENGINEERING AND INFORMATION SYSTEMS

CONTINUOUS ASSESSMENT TEST - II

WINTER SEMESTER 2025-2026

SLOT: A1+TA1

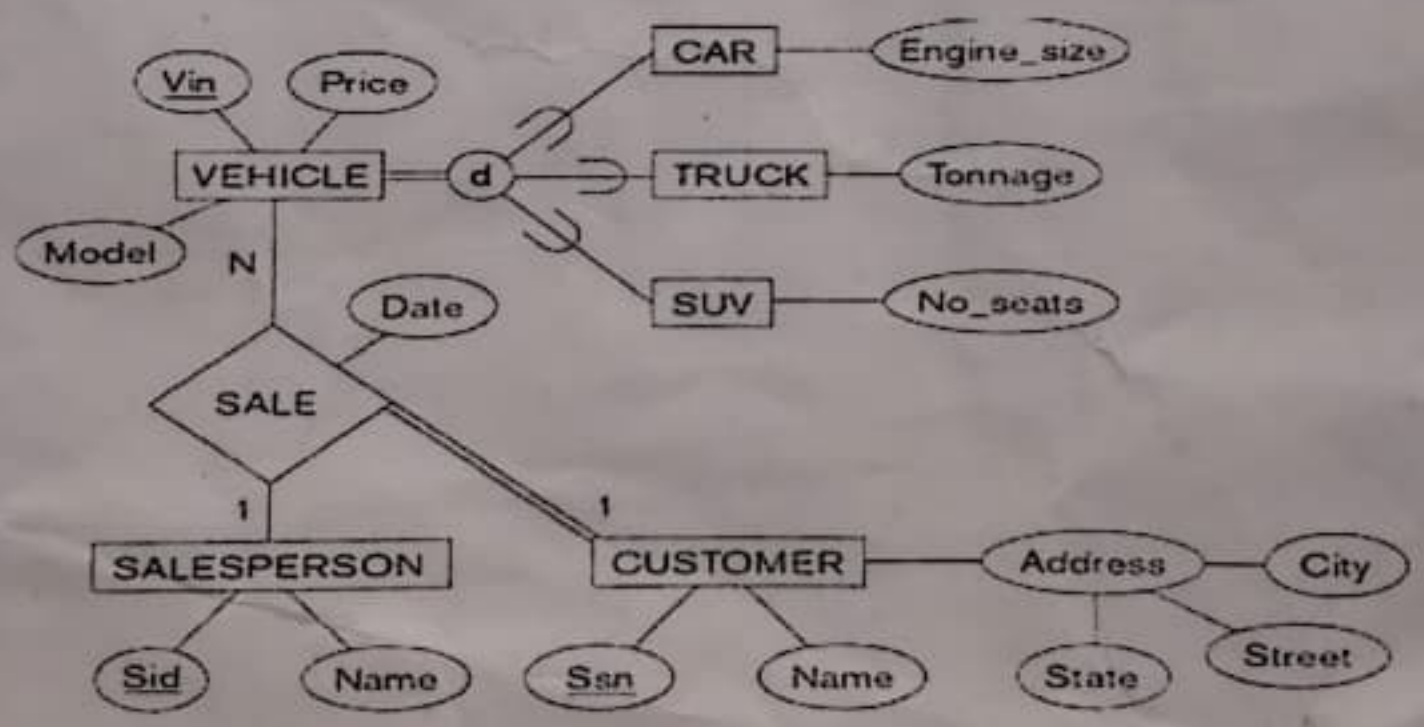
Programme Name & Branch	**: B.Tech [IT]**
Course Code and Course Name	**: BITE302L – Database Systems**
Faculty Name(s)	**: Prof. Bimal Kumar Ray, Prof. Jayaram Reddy A, Prof. Tappan Kumar Das, Prof. J. Karthikeyan**
Class Number(s)	**: VL2025260502761, 2763, 2766, 2768**
Date of Examination	**: 15-03-2026**
Exam Duration	**: 90 minutes** **Maximum Marks: 50**

General instruction(s):

- Answer All Questions
- M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)

Course Outcome:

3. Convert high-level conceptual model to a relational data model and to improve the database design by normalization.
4. Populate and query a database using SQL and PL/SQL. Also apply Query Processing and Indexing techniques to optimize the database system performance.

Q. No	Question	M	CO	BL
1.	a) Map the following ER schema into a relational schema. **(6 marks)**  b) Find the relation state (r(student)) for the below relation. **(4 marks)** Create table student (sno number(2) check (sno between 5 and 6), name varchar2(3) check (name in('a','b')), gender char(1) check (gender in ('M','F')));	10	CO 3	BL 3
2.	r X K Y T 10 B M 2 11 B N 2 12 E M 9 13 E M 9 s X B C Z 10 B 12 2 11 D 13 9 10 F 11 2	10	CO 3	BL 4

REG.NO.:

VIT

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		For the given table, find (Each 2 marks) a. r * s b. $\pi_X(r) - \pi_X(s)$ c. z $\mathcal{F}_{COUNT(*)}(r)$ d. r natural left outer join s e. $\pi_{X,T}(r) \div \pi_X(s)$						
3.		a. Let R(A, B, C, D, E, F, G) be a database schema with functional dependencies. $\mathcal{F}$={AB → C; BC → AD; D → E; CF → B; AF→G; G→A} Compute the possible candidate keys of R. (5 marks) b. Identify and explain the possible anomalies present in the given relation. (5 marks)	10	CO 3	BL 3			
4.		Suppose that R (A, B, C, D, E, F, G, H) is a relational schema with functional dependencies. F = {AB → CE; B→D; A→F; C→G; E→A}. Is this schema in BCNF?. If not, normalize this relation till BCNF.	10	CO 3	BL 3			
5.		With the following relational schema, write the **SQL Queries**. (each 2 marks) STUDENT (**regno**, name, major, DOB, CGPA) ENROLL (**regno, courseno**, grade) COURSE(**Courseno**, Coursename, credit) BOOK_ADAPT (**courseno, BookISBN**) TEXT (**BookISBN**, title, publisher, author) a) Find the student names who have received an A grade in 'JAVA'. b) Produce a list of course numbers that have more than two books. c) Retrieve the course number that follows books published by Pearson Education. d) Find the names of the students who have the highest CGPA. e) Find the student names for whom no course is enrolled.	10	CO 4	BL 3			

CHILDID	EVENT_ID	CHILD Name	Event_ name	Child _class	EventFees
101	E1	Ram	Chess	1	5000
101	E2	Ravi	Abacus	1	7000
102	E1	John	Chess	3	5000
102	E2	Amir	Abacus	3	7000
103	E1	Arun	Chess	2	5000

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