Reg. Number:	

Vellore Institute of Technology
CHENNAI

Continuous Assessment Test I – August 2024

Programme	:	B.Tech (CSE)	Semester	:	Fall Semester 2024-2025
Course Code & Course Title	:	BCSE302L & Database Systems	Slot (s)	:	D2+TD2
Faculty	:	Dr. Premalatha M Dr. Rishikeshan C A Dr. Ilakiyaselvan N	Class Numbers	:	CH2024250101249 CH2024250101253 CH2024250101259
Duration	:	90 Mins	Max. Mark		50

Answer all questions

Q No	Sub Sec	Description	Marks
1.		Consider a relational schema R(W, X, Y, Z), and set of functional dependency F: {X → W, WZ → XY, Y → WXZ}	10
	a)	Find the canonical cover by performing the following: i. Remove the redundant attributes (2 Marks) ii. Remove the redundant functional dependency (3 Marks) iii. Find the Candidate Key (2 Marks)	
	b)	For the functional dependency 'F', identify the key attributes, non-key attributes and specify the relational schema. (3 Marks)	
2.		Hospital management system enables registering new patient details, change the details of existing patients and provide an appointment for patients. Doctors refer the patient's records to upload the medicines prescribed and tests to be done if necessary in this system. Technician uses the system to upload the test result. Patient can view the details of the doctors and availability. i. Identify and discuss the a three-tier architecture for the given scenario with suitable diagram (6 marks) ii. List various kinds of users involved in accessing and manipulating the database schema and mention the responsibilities of the database administrator. (4 marks)	10
3.		Consider the following relational schemas: car(carid, make, model, year, price) customers(cusid, cname, mobile, year) sales(saleid, carid, cusid, sale_date, sale_price) Write SQL queries for the following: i. Create the car, customers and sales relation with primary key attributes respectively as carid, cusid, saleid and set the sale_date, customer name as not null (4 marks) ii. Add default constraint to sale_date as current date (2 marks) iii. Add foreign key constraints (carid, cusid) in sales relation (2 marks) iv. Add a check constraint to accept the mobile column to store 10 digit mobile number (2 marks) v. Find the number of cars which costs more than 10 lakhs, sold on "28-07-2024" from the sale relation (2 marks) vi. Find the carid which was sold for more than the average number of cars	15

		sold. (3 marks)	
4.		You are tasked with designing an airline reservation system for a major airline company. The system needs to manage various aspects of airline operations, including Flights identified by FlightNumber with AirlineCode and FlightNumber, DepartureTime, ArrivalTime and Duration, Aircraft identified by AircraftNumber with CountryCode and SerialNumber, Model and Capacity which accepts multiple values for EconomySeats and BusinessSeats, Ticket identified by TicketNumber (may be similar for more than one person travelling together) and SeatNumber, Passenger identified by PassengerId, Name, Contactinfo, DOB and Age, Airport identified by AirportId, Name, City and Country, Reservation identified by BookingId and BookingDate. One Aircraft has to be assigned with only one Flight A Flight departs from and arrives at an Airport. Ticket is issued to a Passenger. A Passenger makes a Reservation. A Reservation is linked to a Flight.	15
	a)	Construct an Entity Relationship (ER) diagram for the scenario by specifying all types of attributes, mapping cardinalities, participation constraints and add generalization, specialization, attribute inheritance to any of the entity of your choice. (8 Marks)	
	b)	Convert the constructed ER diagram to relational schema and depict the same with the schema diagram (7 Marks)	
		*****ALL THE BEST*****	