SLOT: B1+ TB1

REG. NO.:

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

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING
CONTINUOUS ASSESSMENT TEST - I
FALL SEMESTER 2025-2026

Programme Name & Branch : **B.Tech(CSE)**
Course Code : **BCSE302L**
Course Name : **Database Systems**
Faculty Name(s) : Prof. Swathi J.N, Prof. Mohan Kumar P, Prof. Nagaraja Rao A, Prof. Lydia Jane G, Prof. Navamani T M, Prof. Anand Bihari, Prof. Saraswathi Priyadharshini A, Prof. Vasanthi P, Prof. Krishna Rani Samal K, Prof. Konatham Sumalatha, Prof. Thangaramya K, Prof. Deepika J, Prof. Saurabh Agrawal, Prof. Deepa D, Prof. Anusha R, Prof. Sudhakar K, Prof. Arpita Ghosh, Prof. Maheswari B, Prof. Saraswathi U.
Class Number(s) : VL2025260101324/1328/1381/1385/1388/1373/ 1371/ 1396/1368/1363/1357/1351/1347/1343/1403/1333/1375/1391/1378
Date of Examination : **18- 08 - 2025**
Exam Duration : **90 minutes** **Maximum Marks: 50**

General instruction(s):

- Answer All Questions
- Course Outcomes:
  CO1. Comprehend the role of database management system in an organization and design the structure and operation of the relational data model.
  CO2. Develop a database project depending on the business requirements, considering various design issues.

Q. No	Question	M	CO	BL
1.	a) Why would you choose database system instead of simply storing data in operating system files? When would it make sense not to use a database system?	6	CO1	BL2
	b) Explain the difference between logical and physical data independence.	4		
2.	A university registrar's office maintains data about the following entities: (a) courses, with attributes including number, title, credits, syllabus, and prerequisites; (b) course offerings, is to model year, semester, section number, timings, and classroom; (c) students, with attributes student-id, name, and program; (d) instructors, with attributes identification number, name, department, qualifications and title. Further, the enrolment of students in courses and grades awarded to students in each course they are enrolled in must be appropriately modelled. Each student has exactly one instructor as a proctor. A proctor is a professor/instructor who proctors zero or more students. One or more courses are offered by an instructor, and one or more students register for a course offered by an instructor. A course can have zero or more prerequisites. The qualifications of an instructor can be many. One of the instructors is a HOD for a department. Also, the syllabus for each course is designed by one or more faculty members who are instructors. Construct an E-R diagram for the registrar's office as per the specifications. Document all other assumptions that you make about the mapping constraints (cardinality ratios).	10	CO1	BL3

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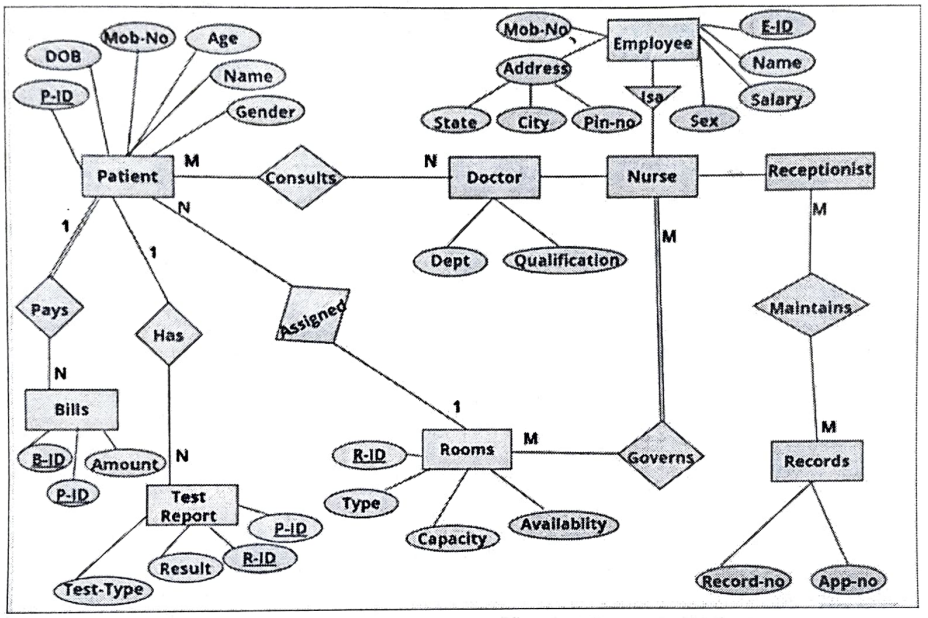
3.	Map the given ER model to a relational schema. Identify and represent all the Constraints 	10	CO1	BL3
4.	a) Discuss about super type and subtype classes of an EER model with one example.	6	CO2	BL2
	b) Why should nulls in a relation be avoided as far as possible? Discuss the problem of spurious tuples and about how we may prevent it.	4		
5.	a) Consider a relational schema R (A B C D E F G H I J) and a set of functional dependencies as follows: F: {AB ->C, AD-> GH, BD ->EF, A-> I, H-> J} Check out that relation R is in 3NF or not? If not decompose it into 3NF	5	CO2	BL4
	b) Discuss about various types of anomalies with example.	5		

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