BENNETT UNIVERSITY THE TIMES GROUP	**School:** School of Computer Science Engineering & Technology

MID-TERM EXAMINATION, ODD SEMESTER OCTOBER 2025

Programme: B.Tech	Semester: III
Course Code: CSET-201	Course Name: Information Management Systems
Time: 01 Hour	Max. Marks: 20

Instructions:
1. *Attempt all the sections.*
2. *Do not write anything on the question paper except enrolment number.*
3. *Assume missing data suitably, if any.*

CO No.	Course Outcome Statements	Bloom's Taxonomy Level
CO1	Articulate the foundational concepts of database systems, including architecture, components, and real-world applications.	Level 2
CO2	Construct Entity-Relationship models and convert them into relational schemas to represent real-world scenarios.	Level 3
CO3	Develop normalized relational schemas using integrity constraints to ensure consistency, efficiency, and minimal redundancy.	Level 5

	SECTION A (3Q x 2M = 06 Marks)			
	ALL QUESTIONS ARE COMPULSORY			
S. No.	Approximate time to attempt Sections: Section A: 3 Questions: 10 min Section B: 2 Questions: 20 min Section C: 2 Question: 30 min	Marks	Course Outcome	BTL Level
Q1	Describe in brief three levels of data abstraction.	2	CO1	L1
Q2	Explain with a suitable example: (a) Multivalued attribute (b) Composite attribute.	2	CO2	L2
Q3	What are different cardinality ratios in ER model. Explain with example.	2	CO2	L3
	SECTION B (2Q x 3M = 06 Marks)			
	ATTEMPT ANY TWO QUESTIONS			
Q4	Write relational queries for the following database: STUDENT(Stud_ID, Stud_Name, Dept) COURSE(Course_ID, Course_Name, Dept) ENROLLMENT(Stud_ID, Course_ID, Grade) a) Retrieve all course names offered by the CSE department.	3	CO2	L3

	b) Display the names of students enrolled in course C1 c) Display all student names along with the enrolled course name.			
Q5	A company is currently using a File-Based System (FBS) to manage its data. Management is considering switching to a Database Management System (DBMS). Mention three key advantages of using a DBMS over a File Based Systems.	3	CO1	L2
Q6	Define partial dependency in the context of database normalization and differentiate it from a transitive dependency. Support your explanation by providing a clear example for each type of dependency.	3	CO2	L3

SECTION-C
(2Q x 4M = 08 Marks)

ATTEMPT ANY TWO QUESTIONS

Q7	Consider the following information about a university database: Professors have an empID, a name, an age, a rank, and a research specialty. Projects have a project number, a sponsor name (e.g., DST), a starting date, an ending date, and a budget. Graduate students have a studentID, a name, an age, and a degree program (e.g., M.S. or Ph.D.). Each project is managed by one professor (known as the project's principal investigator). Each project is worked on by one or more professors (known as the project's co-investigators). Professors can manage and/or work on multiple projects. Each project is worked on by one or more graduate students (known as the project's research assistants). a) Draw an ER diagram that captures the information about the university. b) Mention the key and participation constraints.	4	CO2	L3
Q8	Consider a relation R = {A, B, C, D, E, F, G, H} and set of functional dependencies F={{A}→ {B, C, G, H}; {D}→ {E}; {G}→{H}; {A, F}→{B,C,D,E,G,H}; {A,D}→ {B,C,E,F,G,H}} Find all the candidate Key(s) of relation R and determine its highest normal form, providing a justification for your answer.	4	CO3	L3
Q9	Consider a relation schema R (A, B, C, D) with the functional dependencies {A →B, B→C, C→D, D→B}. Determine whether the decomposition of R into R1(A, B), R2(B, C) and R3(B, D) is a good decomposition in terms of lossless/lossy and dependency preserving or not.	4	CO3	L3