Roll Number: _____

Thapar Institute of Engineering and Technology, Patiala

Department of Electrical and Instrumentation Engineering

END SEMESTER EXAMINATION

B. E. (BME)	Course Code: UCS312 Course Name: Database Management System
December 13, 2024	Friday, 2.00 – 05.00 pm
Time: 3 Hours, M. Marks: 40	Name of Faculty: Dr. Ravinder Kaur

Note: Attempt any 5 questions. Assume any missing data if required.

Sr. No	Questions	Marks	CO	BL
Q.1	Discuss differences between the following with examples: i. Strong and weak entity sets ii. Generalization and Specialization iii. Left Outer Join and Right Outer Join iv. Trival vs Non-trival Functional Dependency	(8)	CO1, CO5	L2
Q.2 (a)	Given the set of functional dependencies: $F = \{A \rightarrow BC, B \rightarrow C, A \rightarrow D, AB \rightarrow C, CD \rightarrow E\}$. Find the canonical cover for this set of functional dependencies by highlighting all the intermediate steps involved.	(4)	CO3	L3
(b)	An Online Store sells many Products. Each product has a product ID, name, price, description, and category. A Customer has a name, customer ID, email, shipping address, and contact number. A customer can place many Orders, and each order contains one or more Products. Each Order has an order ID, order date, shipping date, and total amount. The store also provides Reviews for products. Each review has a rating, review text, and review date. i. Identify the entities, their attributes, and the relationships between them. ii. Draw the ER diagram based on these requirements.	(4)	CO2	L4
Q.3 (a)	Given the relation R(A,B,C,D) and the functional dependency set: $F = \{AB \rightarrow C, C \rightarrow D, A \rightarrow B, D \rightarrow C\}$ Determine the highest normal form of the relation by showing all intermediate steps involved.	(4)	CO3	L3
(b)	Discuss the difference/s and similarities between third normal form and Boyce coded Normal form with suitable examples	(4)	CO3	L3
Q.4	Consider the below relation named *EMP* and answer the following PL/SQL block questions *EMP(EID,* ENAME, SALARY, DEPT_ID, HIRE DATE)			
(a)	Write a PL/SQL trigger that ensures no updates can be made to the SALARY field of an employee after their salary has already been updated twice. The trigger should raise an error if more than two updates are made to the SALARY field.	(4)	CO5	L5

(b)	Create a stored procedure GetEmployeeDetails that accepts an EID as input and returns the employee's NAME, SALARY, and DEPT_ID using output parameters.	(4)	CO5	L5
Q.5 (a)	What do you mean by Concurrency? Why concurrency control is required discuss with suitable examples?	(4)	CO4	L2
(b)	What is the difference between conflict serializability and view serializability? Check whether the given schedule S is conflict serializable or not- S : R1(A) , R2(A) , R1(B) , R2(B) , R3(B) , W1(A) , W2(B)	(4)	CO4	L4
Q6	Consider the following SQL Schema: Teacher(Teacher id:string Primary key,teacher_name: string. teacher_address:string.teacher_telno:integer) Student(Student_id:number Primary key,student_name:string,student address:string) **Evaluation**(teacher id:string. Student_id:integer.date_a_evaluation:date. marks:integer) Write the SQL queries according to the below mentioned questions i. To find average marks given by each teacher ii. To list students who received marks greater than a specific value iii. To find students who received marks greater than 85 iv. To find the total number of evaluations for each student v. To display the names of the Student whose date of evaluation lies in the month of 'December'. vi. To display the Teacher id and name with their student count vii. To change the date of evaluation of student having id 100 and teacher id is T100 from 11 December, 2024 to 23 December 2024. viii. To list of student details who have not been evaluated by any teacher	(8)	CO5	L3

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Note: The Students can check their answer sheets on 20th December 2024 at CD 206A from 3:00-4:00pm