

International Islamic University Chittagong (IIUC)

Department of Electronic and Telecommunication Engineering

Final Examination

Program: **B.sc (Engg.)**
 Course Code: **ETE-4757**
 Total Marks: **50**

Semester: **Autumn 2022**
 Course Title: **Database Management Systems**
 Time: **2 Hours 30 Minutes**

(i) Answer all the questions. The figures in the right-hand margin indicate full marks. (ii) Course Outcomes (COs) and Bloom's Levels are mentioned in additional Columns.						
Course Outcomes (CCs) of the Questions						
CLO1	Understand the basic concepts of database management system, SQL and Relational algebra.					
CLO2	Implementation of SQL query and relational algebra to create, update, delete, modify the table or to search the data from the table.					
Bloom's Levels of the Questions						
Letter Symbols	R	U	Ap	An	E	C
Meaning	Remember	Understand	Apply	Analyze	Evaluate	Create

PART A					
Q1	a)	Consider the university schema given below. Give an expression in SQL for each of the following queries. Course (course_id, title, dept_name, credits) Student (ID, name, dept_name, tot_credit) Instructor (ID, name, dept_name, salary) i. Find the title of courses in the ETE department that have 3 credits. ii. Find the IDs of all students who were taught by an instructor named Murad. Make sure there are no duplicates in the result. iii. Find the highest salary of any instructor.	CLO2	U/ Ap /C	2+3+5
Q2	a)	What are Aggregate Functions? Explain with example.	CLO1	R	2
	b)	Consider the following tables: Employee (Emp_No, Name, Emp_City) Company (Emp_No, Company_Name, Salary) i. Write a SQL query to display employee name and company Name. ii. Write a SQL query to display employee name, employee city, company name and salary of all the employees whose salary > 10000. iii. Write a query to display all the employees working in "XYZ" company	CLO2	U/ C/ Ap	2+3+3
OR					
Q2.	a)	How natural join is different than cartesian product.	CLO1	E	2
	b)	How you can drop a table.	CLO2	U	2+3+3
	c)	How you can drop an attribute from existing relation? Explain with example.	CLO2	An	

PART B

Q3.	a)	What is data model? Explain the classification of data model.	CLO1	R	3
	b)	What is entity, attribute, and relationship? Provide the definition with example.	CLO2	R	3
	c)	Briefly explain the cardinality of relationship.	CLO1	An	4
Q4.	a)	What is relational algebra? Write six operations of relational algebra.	CLO1	R	3
	b)	Explain Transaction Management in Database Management Systems.	CLO1/ CLO2	An, E	3
	c)	<p>Considering the following tables, answer the questions, using relational algebra.</p> <p>Bank (loan_number, branch_name, amount, customer_name) Customer (customer_name, customer_city, customer_street)</p> <p>i. Find those tuples pertaining to loans of more than \$1200 made by the Perryridge branch? ii. Find those customers who live in Harrison city.</p>	CLO2	Ap /C	2+2
Q5.	a)	<p>Consider the schema given below. Give an expression in relational algebra for each of the following queries.</p> <p>Depositor (customer_name, account_number) Borrower (customer_name, loan_number) Loan (loan_number, branch_name, amount)</p> <p>i. Find the names of all bank customers who have either an account or a loan or both? ii. Find all customers of the bank who have an account but not a loan? iii. Find the names of all customers who have a loan at the Perryridge branch.</p>	CLO2	AP /E /C	2+4+4
OR					
Q5.	a)	Why needs the rename operation?	CLO1	An	2
	b)	<p>Considering the following tables, write the expression in SQL.</p> <p>Section (course_id, sec_id, semester, year, building) Department (dept_name, building, budget) Instructor (ID, name, dept_name, salary)</p> <p>i. Find all courses taught in the Fall 2009 semester but not in the Spring 2010 semester. ii. Delete all tuples in the instructor relation for those instructors associated with a department located in the Watson building.</p>	CLO2	E/ Ap	3+5