Name :		
Enrolment No. :		

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2023

Program Name : MCA
Course Name   : Database Management Systems
Course Code   : CSEG7011
No. of Page(s) : 3
Instructions   : Attempt all sections.

Semester : II
Time : 3 hours
Max. Marks : 100

SECTION-A

S. No.	Questions	Marks	CO
Q.1	State the difference between 'Database Schema' and 'Database Instance' with an example.	4	CO1
Q.2	Elaborate various symbols used in ER Diagram. Write use of these symbols.	4	CO2
Q.3	Convert the following SQL query into relational algebraic expression: `SELECT Ename, Salary FROM Employee WHERE city = "Dehradun" AND department = "CSE";`	4	CO3
Q.4	Explain what is transitive dependency and how to remove it using appropriate example.	4	CO4
Q.5	List the conditions for view serializability.	4	CO5

SECTION-B

Q.6		Classify various types of DBMS users. Discuss various responsibilities of these users with example.	10	CO1
Q.7		Attempt the following-	10	CO2
	A)	Explain total and partial participation of entities in a relation with one example of each.	(6)	
	B)	Explain generalization and specialization of entities with an example.	(4)	
Q.8		Attempt the following-	10	CO3
	A)	Elaborate any 2 operators of relational algebra with syntax and example.	(4)	
	B)	Explain different types of inner joins with one example each.	(6)	

Q.9	Explain how one relational database can be normalized in 3NF. If $\alpha \to \beta$ functional dependency exist, then how 3NF rules are checked in context of super key and prime, non-prime attributes. Explain with relevant example.	10	CO4
	OR		
	Consider the following table and identify the type of dependency that exists in this table. Decompose and normalize this table to remove this dependency.		

Course	Faculty	Textbook
Java	F01	Book1
	F02	Book2
	F03	Book3
	F04	
Python	F05	Book4
	F06	Book5
	F07	
DBMS	F08	Book6
		Book7

SECTION-C			
Q.10	Attempt the following-	20	CO5
A)	Explain types of locks and their compatibility with each other.	(6)	
B)	Explain Read timestamp, Write timestamp and Transaction timestamp.	(6)	
C)	Explain the following deadlock prevention scheme- Wait-Die, Wait-wound.	(8)	
Q.11	Consider the following tables and write SQL queries to find answers to given questions. Table 1: Doctors(D_ID, D_Name, City, Experience) Table 2: Patients(P_ID, P_Name, Profession, Age) Table 3: Wards(W_ID, W_Name, Department, No_of_Beds) Table 4: Visits(D_ID, P_ID, Visit_Date, Issue, Fees)	20	CO3
A)	Print all the details of all doctors.	(1)	
B)	Print Patient ID and Name of all the patients.	(1)	

C)	Print Ward ID and Name of all wards that belong to the "Cardiology" department.	(2)	
D)	Print Doctor ID and Patient ID for all the visits on "01-04-2023".	(2)	
E)	Print the maximum experience of doctors in each city.	(3)	
F)	Print the total amount of fees paid by the patients having issue "Cough and Cold".	(3)	
G)	Print the names and Ages of patients treated by a doctor named "ABC".	(4)	
H)	Print the date on which a patient named "XYZ" visited a doctor named "ABC" for "Viral Fever".	(4)	
	OR		
	Consider the following tables and write SQL queries to find answers to given questions. Table 1: Students(S_ID, S_Name, Marks, Address) Table 2: Course(S_ID, C_ID, C_Name)	20	CO3
A)	Print all the details of all students.	(1)	
B)	Print all the distinct course ids and corresponding names.	(1)	
C)	Print average marks of students from "Dehradun".	(2)	
D)	Print Student ID and Name of all students from the following cities-"Chandigarh", "Dehradun".	(2)	
E)	Print Student ID and Name of all students enrolled in "Python" course.	(3)	
F)	Write the output of cartesian product on these tables.	(3)	
G)	Print all pairs of students from same city.	(4)	
H)	Write the result of left, right and full outer join on these tables.	(4)	