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**Presidency University**

**Bengaluru**

 **SCHOOL OF ENGINEERING**

**MAKE-UP EXAMINATION – SEP 2023**

**Course Code**: CSE 207

**Course Name**: Database Management Systems

**Program & Sem**: B.TECH

**Date**: 04.10.2023

**Time**: 9:30AM TO 12:30PM

**Max Marks**: 100

**Weightage**: 50%

 **Instructions:**

1. *Read the all questions carefully and answer accordingly.*

**Part A [Memory Recall Questions]**

**Answer all the Questions. Each question carries FIVE marks. (02Qx 05M= 10M)**

Q.NO. 1 Explicate the following i) Insertion Anomaly ii) Deletion Anomaly iii) Modification Anomaly (C.O.No.3) [Comprehension level]

Q.NO. 2 Explicate database transaction states using state transition diagram.(C.O.No.4) [Knowledge level]

**Part B [Thought Provoking Questions]**

**Answer all the Questions. Each question carries TEN marks. (03Qx10M=30M)**

Q.NO. 3 Design ER Diagram for the Hospital Database System. Assume your own entities (Minimum of 5 entities), attributes, relationships, cardinality, and participation constraints (C.O.No.1) [Application level]

Q.NO. 4 Explicate with an example in SQL

i) Views

ii) Renaming attributes and joined tables (C.O.No.2)[Comprehension level]

Q.NO. 5 Suppose you are given a relation R with four attributes ABCD. For each of the following sets of FDs, assuming those are the only dependencies that hold for R, do the following:

(a) Identify the candidate key(s) for R.

(b) Identify the best normal form that R satisfies (1NF, 2NF, 3NF, or BCNF).

(c) If R is not in BCNF, decompose it into a set of BCNF relations.

A. Consider the relation R (ABCD) with FD set is {AB, CD}.

B. Consider the relation R (ABCD) with FD set is {AB, BC, CD}.

C. Consider a relation R (A, B, C, D), with FDs AB -> C, BC -> D, CD -> A.

(C.O.No.3)[Comprehension level]

**Part C [Problem Solving Questions]**

**Answer the Question. Each question carries SIXTY marks. (01Qx60M=60M)**

Q.NO. 6 The following relations keep track of airline flight information: (C.O.No.2) [Application level]

Flights (flno: integer, from: string, to: string, distance: integer, departs: time, arrives: time, price: integer)

Aircraft (aid: integer, aname: string, cruisingrange: integer)

Certified (eid: integer, aid: integer)

Employees (eid: integer, ename: string, salary: integer)

 Note that the Employees relation describes pilots and other kinds of employees as well; every pilot is certified for some aircraft, and only pilots are certified to fly.

For the above schema, perform the following.

a) Create the above tables by specifying primary keys and foreign keys.

b) Insert around 10 records in each of the tables.

c) Find the names of aircraft such that all pilots certified to operate them earn more than 80,000.

d) For each pilot who is certified for more than three aircraft, find the eid and the maximum cruising range of the aircraft that he (or she) is certified for.

e). Find the names of pilots whose salary is less than the price of the cheapest route from Los Angeles to Honolulu.

f) Find the second highest salary of an employee.