

**III B. Tech II Semester Regular/Supplementary Examinations, October/November - 2020****DATA BASE MANAGEMENT SYSTEMS**

(Common to Civil Engineering, Aeronautical Engineering)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)2. Answer **ALL** the question in **Part-A**3. Answer any **FOUR** Questions from **Part-B****PART -A****(14 Marks)**

1. a) Define Logical data independence. [2M]
- b) What is a composite search key, and what considerations are made in choosing composite search keys? [2M]
- c) List out unary operators in Relational Algebra. [2M]
- d) Discuss impact of null values in aggregate operators. [3M]
- e) What is transitive dependency and partial dependency? Give examples. [3M]
- f) Briefly discuss deferred update. [2M]

**PART -B****(56 Marks)**

2. a) Distinguish between centralized and client-server architectures of a database system. [7M]
- b) What is Data Base Administrator(DBA)? Discuss the functions of DBA. [7M]
3. a) Consider the following relations containing airline flight information: [10M]  
 Flights(fno: integer, from: string, to: string, distance: integer, departs: time, arrives: time)  
 Aircraft(aid: integer, aname: string, cruisingrange: integer)  
 Certified(eid: integer, aid: integer)  
 Employees(eid: integer, ename: string, salary: integer)  
 Write the following queries in relational algebra, domain relational calculus, and SQL.
  - i) Find the aids of all aircraft that can be used on non-stop flights from Bonn to Madras.
  - ii) Identify the flights that can be piloted by every pilot whose salary is more than \$100,000.
  - iii) Find the names of pilots who can operate planes with a range greater than 3,000 miles but are not certified on any Boeing aircraft.
- b) What is the difference between DELETE, TRUNCATE and DROP statements in SQL? [4M]
4. a) Construct an ER diagram for university central office. The office maintains data about each class, including the instructor, the enrollment and the time and place of the class meetings. For each student class pair a grade is recorded. Determine the entities and relationships along with constraints. [8M]
- b) Discuss the importance of entity integrity, referential integrity and domain constraints. [6M]
5. a) Give a set of FDs for the relation schema R(A,B,C,D) with primary key AB under which R is in 2NF but not in 3NF. [6M]
- b) Explain the advantages of decomposition? Discuss the problems faced in decomposition. [8M]

6. a) Write about the transaction management with SQL using commit, rollback, and savepoint. [6M]  
b) Discuss in detail about timestamp based concurrency control techniques. [8M]
7. a) What is an index? Why index is needed? Discuss various techniques for creating data entries for index. [6M]  
b) Explain the difference between Hash indexes and B+-tree indexes. In particular, discuss how equality and range searches work, using an example. [8M]

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