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# INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

B.Tech IV Semester End Examinations (Supplementary) - July, 2018

Regulation: IARE – R16

## DATABASE MANAGEMENT SYSTEMS

Time: 3 Hours

(CSE)

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

### UNIT – I

1. (a) Discuss about the roles of DBA. Does DBA understand about Query optimization? [7M]  
 (b) What are the types of Data Independencies? Discuss in detail [7M]
2. (a) Depict and explain Database System Environment . [7M]  
 (b) What is Aggregation? Explain by considering 'INTERVIEW' example. [7M]

### UNIT – II

3. (a) Define a Tuple Relation Calculus and Explain the procedure for obtaining the names of employees having salary more than fifty thousand and certified [7M]  
 Consider the following relation  
 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)  
 Employes(eid: INTEGER, ename: STRING, salary: INTEGER) [7M]  
 (b) How the statement 'the eids of pilots certified for some Boeing aircraft' can be represented in the form of Relational Algebra and Tuple Relational Calculus from the above relations.
4. (a) Write the Domain Relational Calculus and Tuple Relational Calculus statements for 'the names and their salaries of pilots certified for some Boeing aircraft' by using above relations.  
 (b) Are Set theory operations like UNION, INTERSECTION, MINUS useful in Relational Algebra? Discuss. [7M]

### UNIT – III

5. (a) Discuss about SELECT – FROM – WHERE structure in SQL with an example. [7M]  
 (b) Discuss about  
     i. 1<sup>st</sup> Normal form  
     ii. 2<sup>nd</sup> Normal form [7M]  
     iii. 3<sup>rd</sup> Normal form

6. (a) Write the SQL query for using Supplier Relations and write the SQL statements for the following queries [7M]  
 i) Find pairs of sids such that the supplier with the first sid charges more for some part than the supplier with the second sid.  
 ii) Find the sids of suppliers who supply some red part and some green part  
 (b) Explain the Key constraints i) Primary Key ii) Foreign Key with examples. [7M]

**UNIT – IV**

7. (a) During its life time a transaction moves from one state to another. Explain this transition of a transaction with a neat diagram. [7M]  
 (b) Three transactions T1 ,T2 and T3 given below [7M]  
 T1: r1(a); w1(a); r1(b); w1(b)  
 T2: r2(b); w2(b);  
 T3: r3(a); w3(a); r3(b); w3(b) And Schedule  
 S={r1(a);r3(a);w1(a);w3(a);r1(b);r2(b);w1(b);w2(b);r3(b);w3(b);}  
 Is the schedule S conflict serializable? Explain your answer.  
 8. (a) Explain Timestamp ordering Concurrency control technique with example. [7M]  
 (b) With a neat diagram explain NO-UNDO/REDO recovery mechanism in transaction processing. [7M]

**UNIT – V**

9. (a) Explain the techniques for allocating file blocks on disk. [7M]  
 (b) Explain internal hashing technique with an example. [7M]  
 10. (a) What does it mean to say that a page is pinned in the buffer pool? Who is responsible for pinning pages? Who is responsible for unpinning pages? [7M]  
 (b) What is the minimum space utilization for B+ tree index? [7M]

