

SVKM's NMIMS
MUKESH PATEL SCHOOL OF TECHNOLOGY MANAGEMENT & ENGINEERING

Programme: MCA

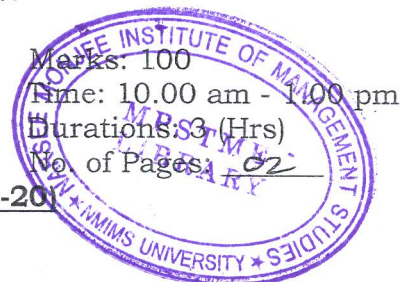
Year: I

Semester: I

Academic Year: 2019-20

Subject: Database Management Systems

Date: 16 November 2019



Final Examination (2019-20)

Instructions: Candidates should read carefully the instructions printed on the question paper and on the cover of the Answer Book, which is provided for their use.

- 1) Question No. 1 is compulsory.
- 2) Out of remaining questions, attempt any 4 questions.
- 3) **In all 5 questions to be attempted.**
- 4) All questions carry equal marks.
- 5) **Answer to each new question to be started on a fresh page.**
- 6) **Figures in brackets on the right hand side indicate full marks.**
- 7) **Assume suitable data if necessary.**

1. A Explain the concept of data independence and its importance in database systems. (6)
B Define the following relational algebra operations with examples. (6)
 a. Projection b. Natural join c. Rename
C Draw an ER Schema for The Book Club. It has members to whom books are sold. The books are made available at different places in the city called Book Club Chapter to make it easy for the members; The books are identified by ISBN, the author and publisher. An author can write more than one book and a book can have more than one author. Members have information such as membership-id, name, phone_no and status. A member can place more than one order. Other assumptions can be made. (4)
D Convert the above ER diagram in to relation (table). Specify the rules to convert ER diagram in to table. (4)
2. A What is serializability? Explain why conflict serializability is more strict than view serializability? (10)
B What is aggregate function? Define types of aggregate functions in terms of SQL and Relational Algebra. (10)
3. A Discuss various types of attributes in entity relationship diagram (10)

- B Explain fourth normal form and BCNF normal form with example (10)
- 4 A Sailors (sid, sname, age, city, rating) (10)
 Boat (bid, sid, bname, color)
 Reserve (sid, bid, day, year, model)
 (assume above relations are already created)
 Write SQL syntax for given queries:
 a) Update the boat color to yellow of boat id 102
 b) Delete sailors records whose name do not start from A and ratings range is 1 to 4
 c) Find the sailor id and name who reserved boat no 103
 d) Find the name of sailors who bought the same color boat which Jini bought
 e) Find the average age of sailors for Mumbai city who got same ratings
 f) Delete year column from reserve relation
- Write Relational Algebra syntax for given queries:
 a) Find the sailor information with rating above 7
 b) Use full outer join and find sailor name and city which reserved red color boat
 c) Count the number of years when boat has been reserved on same day
 d) Create view for sid, bid and model for year 2018
- B Explain various domain constraints in SQL. (10)
- 5 A Explain dependency preservation of functional dependency with example. (10)
 B Explain ACID properties and transaction states in detail. (10)
- 6 A What is deadlock condition in DBMS? How to prevent from deadlock? (10)
 B How indexing and hashing techniques are important for database storage? (10)
- 7 A Discuss various advantages of database management system over file processing system. (6)
 B Explain Views and group by clause in relational algebra. (6)
 C Find out the number of key attributes of given relation R (A , B , C , D , E , F , G) with functional dependencies: (4)

$$A \rightarrow BC, BC \rightarrow DE, D \rightarrow F, CF \rightarrow G$$

 D Define trigger in SQL. (4)
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