R20

II B. TECH II SEMESTER REGULAR EXAMINATIONS, JUNE - 2022
DATABASE MANAGEMENT SYSTEMS
(COMMON TO CSE, INF, CSO, CSM & CIC)

Time: 3 hours   Max. Marks: 70

Note: Answer **ONE** question from each unit **(5 × 14 = 70 Marks)**

~~~~~~

UNIT-I

1. a) Discuss the advantages of DBMS.   [7M]

    b) Examine the levels of abstraction in the DBMS.   [7M]

(OR)

2. a) Explain about database system structure or DBMS architecture.   [7M]

    b) Describe the database design process.   [7M]

UNIT-II

3. a) Explain about the conceptual database design with the E-R model.   [7M]

    b) Design an airline database using ER model. The database must keep track of customers and their reservations, flights and their status, seat assignments on individual flights, and the schedule of future flights.   [7M]

(OR)

4. a) Explain briefly about the relational algebra operations.   [7M]

    b) Consider the following schemas   [7M]
        Sailors (sid:integer, sname:string, rating:integer, age:real)
        Boats (bid:integer, bname:string, color:string)
        Reserves (sid:integer, bid:integer, day:date)
        Based on the above schemas, write the corresponding relational algebra queries for the following.
        i)   Find the names of sailors who have reserved boat 101.
        ii) Find the names of sailors who have reserved at least one boat.
        iii) Find the names of sailors who have reserved a red boat.
        iv) Find the sids of sailors with age over 20 who have not reserved a red boat.
        v)   Find names of sailors who have reserved the boat Interlake.

UNIT-III

5. a) Explain about nested and correlated nested queries.   [7M]

    b) Illustrate different aggregate functions in SQL with examples.   [7M]

(OR)

6.   Write SQL queries using the following relational database.   [14M]
Students(sno:integer, sname:string, age:integer, cid:integer)
Enrolled (cid:integer, cname:string, fid:integer)
Faculty (fid:integer, fname:string, dept:string)
    a)   Find the names of students who are enrolled in a class taught by Harish.
    b)   Find the age of oldest student.
    c)   Find the names of students enrolled in History.
    d)   Find the department of faculty whose name starts with 's'.
    e)   Find the names of students who are enrolled in a class and age is over 17 taught by Harish.

UNIT-IV

7. a)   Explain about lossless-join and dependency preserving decompositions.   [7M]

    b)   Describe the multivalued dependencies.   [7M]

(OR)

8. a)   Consider the relation SUPPLIER (SNAME, STREET, CITY, STATE, TAX) with key on SNAME and   [7M]

        FD : STATE $\rightarrow$ TAX.

    Decompose the relation SUPPLIER into 3NF Relations.

    b)   Distinguish the following terms   [7M]
    a) Functional dependency   b) Normalization
    c) Multivalued dependency   d) Redundancy   e) BCNF

UNIT-V

9. a)   Explain about strict two phase locking protocol.   [7M]

    b)   Determine when two operations in a schedule are said to be conflict?   [7M]

(OR)

10. a)   Explain about Optimistic concurrency control.   [7M]

    b)   Explain about Timestamp based concurrency control .   [7M]

* * * * *