(Pages : 3) **B – 6100**

Reg. No. : .....

Name : .....

Fourth Semester B.Tech. Degree Examination, June 2017
(2008 Scheme)
08.406 : DATABASE DESIGN (F)

Time : 3 Hours Max. Marks : 100

PART – A

Answer **all** questions :

1. Differentiate traditional file system with database system.
2. What are the main categories of data model ? Explain any two.
3. What is meant by recursive relationship type ? Give an example.
4. Explain how a many to many relationship in an ER diagram is converted into relation.
5. Explain how is referential integrity constraint is implemented in SQL.
6. Write any two data definition language commands with example.
7. Define join dependency and PJNF.
8. How does multilevel indexing improve the efficiency of searching an index file ?
9. Explain the violations caused by dirty read and phantoms.
10. Describe the write-ahead logging protocol. **(10×4=40 Marks)**

PART – B

Answer **any one** question from **each** Module : **(3×20=60 Marks)**

Module – I

11. a) Describe the three schema architecture in database management systems. **10**

    b) Consider an employment agency computerizing its service. An employer may offer a number of jobs. Applicants may apply for many jobs. The job history of each applicant is recorded as previous job. Employer details include employer name and address. Job details include job code, title and salary. Applicant details include application number, name, address, phone, date of birth and applying date. Job history details include job history id, title, salary, duration and skill required. Construct an ER diagram for the above scenario. **10**

OR

12. a) Explain in detail about database languages and database users. **10**

    b) Consider the following Relational Schema **10**

    Employee (Empid, Name, Address, Sex, Salary, Dname, Date–of-joining)

    Department (Dname, Location)

    and write the relational algebra notation for the following :

    i) List the number of persons working in each department.

    ii) Give the highest salary and the lowest salary in each department sorted department name wise.

    iii) List the employees who works in the department located in "Delhi".

    iv) List the number of female employees in department named "Sales".

Module – II

13. a) Explain the different ways by which a join operation can be modeled using SQL. **10**

    b) Consider the following relation : **10**

    Shipping (ShipName, ShipType, VoyageID, Cargo, Port, Date)

    Hint: Date is the date the ship arrives in the given Port

    With the functional dependencies :

    ShipName $\rightarrow$ ShipType

    VoyageID $\rightarrow$ ShipName, Cargo

    ShipName, Date $\rightarrow$ VoyageID, Port

    i) Identify the candidate keys.

    ii) Normalize this relation into 3NF.

OR

14. a) Create the following tables with foreign key constraints wherever necessary **10**

    MEMBER (Memid, Memname)

    Book(Bookid,Name,Category,Price,Availablestatus)

    Borrow(Memid,Bookid,Issuedate)

Write the following in SQL :

i) Give the details of the members who have not taken any book.

ii) Give the details of the book which have the second minimum price.

iii) Give the details of the members who have taken more number of books.

iv) Give all the information of members along with the details of the book taken.

b) Explain the dependency preservation property and lossless join property of decomposition. **10**

Module – III

15. a) Describe the atomicity, durability, isolation and consistency preservation properties of a database transaction. **10**

b) What is a two-phase locking protocol ? Explain how does it guarantee serializability. **10**

OR

16. a) Assume that the tree is initially empty and construct a B tree of order 5 for the following set of key values :

1,12, 8, 2, 25, 5, 14, 28, 17, 7, 52, 16, 48, 68, 3, 26, 29, 53, 55, 45. **10**

b) Describe the three phases of ARIES recovery method. **10**