Bool. 10

Exam.Code:0915
Sub. Code: 6777

1128
B.E. (Computer Science and Engineering)
Third Semester
CS-302: Database Systems

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.

x-x-x

I. Answer the following in brief:-

a) What is Query Tree?

b) Explain atomicity of transaction.

c) Define threat with example.

d) What are clustered indexes? List its advantages and disadvantages.

e) What is join dependency? How it is related to normalization?

f) Define deferred update. Give example.

g) Difference between cursors and triggers.

h) Define cardinality in ER diagram. Give example.

i) List all the aggregate operators in SQL.

j) Define digital signatures. (10x1)

UNIT – I

II. Consider the following schemas:

Sailors (sid, sname, rating, age)

Reserves (sid, bid, day)

Boats (bid, bname, color)

Write the following queries in relational algebra, tuple relational Calculus and domain relational calculus:

a) Find the name of sailors who have reserved boat 103.
b) Find the names and ages of sailors with a rating above 7.
c) Find the names of sailors who have reserved a red boat.
d) Find the sname, bid, and day for each reservation.
e) Find the name of sailors who have reserved at least one boat. (10)

P.T.O.

III. a) How checkpoints are used in database recovery?

b) Define a transaction and its desirable ACID properties. Explain the problem of dirty read by giving an example. (5x2)

IV. Consider the following relation for published books:

BOOK(Book_title, Author_name, Book_type, List_price, Author_affil, Publisher)

Author_affil refers to the affiliation of author.

Suppose the following dependencies exist:

Book_title → *Publisher, Book_type Book_type* → *List_price*

Author _name → *Author _affit*

a) What normal form is the relation in? Explain your answer.

b) Apply normalization until you cannot decompose the relations further. State the reasons behind each decomposition (10)

UNIT – II

V. Differentiate between the following:-

a) Strong entity set and a weak entity set

b) 1 :N and M:N cardinality

c) TRC and DRC

d) 3NF and BCNF

e) DAC and MAC (5x2)

VI. a) Explain two phase locking protocol. What are its disadvantages?

b) Explain types of access control method. Discuss the popular model for mandatory access control. Define Polyinstatiation. (2x5)

VII. a) What are the properties of transaction management? Explain serializability with example.

b) What is a query evaluation plan? What are its advantages and disadvantages? (2x5)

x-x-x