Exam.Code:0923
Sub. Code: 6846

1129

B.E. (Information Technology)
Fifth Semester
ITE-501/571: Database Management Systems

Time allowed: 3 Hours   Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I.   Attempt the following:-

a) Give the syntax for creating a view in SQL.

b) Differentiate between database schema and database state.

c) What do you understand by a B-Tree?

d) List the various cases where use of NULL value is appropriate for an attribute.

e) What are read-write locks?   (5x2)

UNIT – I

II. a) What is the difference between logical data independence *and* physical data independence?

b) Outline the steps to convert the basic ER model to relational database schema. (3,7)

III. a) How is hashing implemented for primary file organization?

b) What are the reasons for variable-length records? What are the various types of separator characters needed for organising these records?   (2x5)

IV. a) Define entity type, entity set and key attribute. Draw an ER diagram for an entity type CAR with attributes Vehicle_id, Year, Model, Make and Color where 'Vehicle_id' is a key attribute and 'Color' is a multivalued attribute.

b) What is a cardinality ratio? What are different types of cardinality ratio in a binary relationship? Give one example for each type.   (2x5)

UNIT – II

V.   Consider the following relations:
Student *(snum: integer, sname: string, major: string, level: string, age: integer)*
Class *(classname: string, meets at: string, room: string, facultyid: integer)*
Enrolled *(snum: integer, classname: string)*
Faculty *(facultyid: integer, facultyname: string, deptid: integer)*

P.T.O.

The meaning of these relations is straightforward; for example, *Enrolled has* one record per student-class pair such that the student is enrolled in ,the class.
Write the following queries in SQL. No duplicates should be printed in any of the answers.

a) Find the names of all Juniors (*level* = *JR*) who are enrolled in a class taught by "*Ms. Vaishali*".

b) Find the age *(age)* of the oldest student who is having *History* as *major*.

c) Find the names of all classes that either meet in *room "R128"* or have five or more students enrolled.

d) For all levels except *JR*, print the level *(level)* and the average age of students for that level.

e) Find the names *(sname)* of students not enrolled in any class.   (10)

VI.   a) Explain each of the following with example
          i) Fourth Normal Form
          ii) Boyce-Codd Normal Form
        b) Why is the domain-key normal form known as the ultimate normal form?
        c) What is meant by the closure of a set of functional dependencies?   (6,2,2)

VII.   a) Discuss the problems faced when concurrent transactions are executed in an uncontrolled manner.

        b) Discuss the different techniques to deal the deadlock problem of concurrently executing transactions.   (2x5)

x-x-x