

2122

B.E. (Information Technology)

Third Semester

PC-IT-303: Database Management System

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 7 (Section-C) which is compulsory and selecting two questions each from Section A-B.

x-x-x

SECTION – A

Q1. (a) What is meant by Database Management System? Discuss the features that give it an edge over traditional file system. (5)

(b) Explain the three-tier architecture of Database Management System. (5)

Q2. (a) Define the following giving significance of each

(i) Indexing

(ii) Hashing

(iii) B-trees

(iv) Clustered index

(v) Variable length Records (5)

(b) Describe ER model with the help of diagram and explain the concept of Aggregation? (5)

Q3. Consider the following schema:

Suppliers (sid : integer, sname : string, address: string)

Parts (pid : integer, pname : string, color : string)

Catalog (sid : integer, pid : integer, cost : real)

The key fields are underlined and domain of each field is listed after the field name

(a) Find the name of suppliers who supply some red parts.

(b) Find the sids of suppliers who supply some red or green parts.

(c) Find the sids of suppliers who supply every red part.

(d) Find the sids of suppliers who supply some red part and some green part.

(e) Find the sids of suppliers who supply every part. (5*2=10)

SECTION – B

Q4. Create the following tables, enter at least 5 records in each table and answer the queries given below.

EMPLOYEE (Person_Name, Street, City)

WORKS (Person_Name, Company_Name, Salary)

(2)

COMPANY (Company_Name, City)

MANAGES (Person_Name, Manager_Name)

- a) Alter table employee, add a column —email of type varchar(20).
- b) Find the name of all managers who work for both Samba Bank and NCB Bank.
- c) Find the names, street address and cities of residence and salary of all employees who work for —Samba Bank and earn more than \$10,000.
- d) Find the names of all employees who live in the same city as the company for which they work.
- e) Find the highest salary, lowest salary and average salary paid by each company. (5*2=10)

Q5. Illustrate using example the Normalization of database upto 3NF? What does BCNF stands for? (10)

Q6. Differentiate between

- (a) Conflict and View Serializability
- (b) Two phase Commit Protocol and Two phase Locking Protocol. (2*5=10)

SECTION – C

Q7. (a) Differentiate logical data independence and physical data independence?

(b) What are triggers? Discuss the strengths and weakness of trigger mechanism.

(c) Discuss the function of DBA?

(d) What are ACID properties? Explain.

(e) Differentiate between DDL and DML commands? (5*2=10)