CBCS SCHEME

USN | | | | | | | | | | |

15CS53

Fifth Semester B.E. Degree Examination, Aug./Sept.2020
Database Management System

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Discuss the advantages of using the DBMS approach. **(06 Marks)**

b. Explain three-schema architecture with a neat diagram. Why do we need mapping between schema levels? **(06 Marks)**

c. What is Data Independent? Explain different types of Data Independence. **(04 Marks)**

OR

2 a. Explain the component modules of DBMS and their interaction with a neat diagram. **(06 Marks)**

b. Explain different types of attributes that occur in ER model with an example. **(06 Marks)**

c. Design a ER diagram for keeping track of information about Bank database taking into an account atleast four entities. **(04 Marks)**

Module-2

3 a. Discuss the characteristics of relations that make them different from ordinary tables and files. **(08 Marks)**

b. Explain the steps to convert the basic ER model to relational database schema. **(08 Marks)**

OR

4 a. What are the basic data types available for attributes in SQL? Explain with example. **(06 Marks)**

b. Define foreign key. Explain all possible options that can be specified when a referential integrity constraint is violated. **(04 Marks)**

c. Write the SQL syntax with example for the following :
(i) ALTER (ii) INSERT (iii) UPDATE **(06 Marks)**

Module-3

5 a. Explain the following with an example.
(i) Correlated nested queries
(ii) Assertions. **(06 Marks)**

b. Explain aggregate functions in SQL with example. **(04 Marks)**

c. Consider the following tables:
WORKS(Pname, Cname, Salary)
LIVES(Pname, Street, City)
LOCATED_IN(Cname, City)
MANAGER(Pname, Mgrname)
Write the SQL Query for the following :
(i) Retrieve the names of the people who work for Wipro along with the address they live in.
(ii) Retrieve the name of the person who gets second highest salary.
(iii) Find the number of employee and average salary of each company. **(06 Marks)**

OR

6 a. Explain the following with an example:
(i) Cursor
(ii) Database Stored Procedure. (08 Marks)
b. Explain the Standard Three-Tier Architecture and list the advantages. (08 Marks)

Module-4

7 a. What is Functional Dependency? Explain the inference rules for functional dependency with proof. (08 Marks)
b. Define 1NF, 2NF and 3NF by taking an example. (08 Marks)

OR

8 a. Write an algorithm to find a minimal cover for a set of functional dependencies. (04 Marks)
b. Find the closure sets with respect to F.
F = {ssn → {Ename, Bdate, Address, Dnumber}, Dnumber → {Dname, Dmgr_ssn}} (04 Marks)
c. Which normal form is based on the concept of multivalue functional dependency? Explain the same with example. (08 Marks)

Module-5

9 a. What are the problems faced when concurrent transactions are executed in an uncontrolled manner? Give an example and explain. (06 Marks)
b. With a neat diagram explain the states for transaction execution. (06 Marks)
c. Briefly explain the desirable properties of transactions. (04 Marks)

OR

10 Write a note on :
a. Timesamp ordering (08 Marks)
b. NO-UNDO/REDO recovery algorithm. (08 Marks)

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