CBCS SCHEME

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

17CS53

Fifth Semester B.E. Degree Examination, July/August 2021
Database Management System

Time: 3 hrs. Max. Marks: 100

Note: ***Answer any FIVE full questions.***

1 a. Define DBMS. Discuss the advantages of DBMS over traditional file system. **(06 Marks)**
b. What are the responsibilities of DBA and Database Designers? **(04 Marks)**
c. With an aid of a neat diagram, describe a Three – Schema Architecture and Data Independence. **(10 Marks)**

2 a. What are Structural constraints on a relation type? Explain with examples. **(05 Marks)**
b. What is a Weak Entity type? Explain the role of partial key in design of weak entity type. **(05 Marks)**
c. Design an ER – Diagram for a UNIVERSITY database schema and indicate all key and cardinality constraints. **(10 Marks)**

3 a. List and explain characteristics of Relations. **(05 Marks)**
b. List Set theory operations used in relational data model. Explain any two with examples. **(05 Marks)**
c. Briefly discuss the different type of Update Operations on relational database. Show an example of a violation of the referential integrity in each of the update operations. **(10 Marks)**

4 a. Explain the following SQL commands : CREATE , INSERT , SELECT and UPDATE. Give their syntax and atleast one example for each. **(14 Marks)**
b. Write the SQL statement for the :
i) Show the resulting salaries if every employees working on the 'Product X' project is given a 10% raise.
ii) Retrieve all employees in department 5. Whose salary is between $ 30,000 and $ 40,000.
iii) Retrieve the name and address of all employees who work for the 'Research' department. **(06 Marks)**

5 a. Explain how the group by clause works. What is the difference between the WHERE and HAVING clause? **(05 Marks)**
b. What is a View? Explain how view's are created and dropped. **(05 Marks)**
c. Explain with an example constraints as Assertions and Actions as trigger. **(10 Marks)**

6 a. What is a CURSOR? Explain with example, retrieving multiple tuples with embedded SQL. **(10 Marks)**
b. Explain the concept of Create, Passing parameter, Call stored procedure from JDBC. **(10 Marks)**

7 a. Briefly explain the informal design guidelines used as measure to determine the quality of relations schema design. **(08 Marks)**
b. Define the 1NF, 2NF and 3NF with a suitable example for each. **(12 Marks)**

8 a. Write an Algorithm to find a minimal cover for a set of functional dependencies. **(06 Marks)**

b. Find the minimal cover of G : The given set of FDs be G : {A $\rightarrow$ BCDE , CD $\rightarrow$ E}. **(04 Marks)**

c. Define Multi – valued dependency. Explain 4NF with an example. **(10 Marks)**

9 a. Discuss ACID properties of a database transaction. **(04 Marks)**

b. Explain the following with suitable example :

i) The lost update problem ii) The Temporary update (dirty read) problem. **(06 Marks)**

c. What is Schedule? Explain Conflict Serialization schedule with example. **(10 Marks)**

10 a. Briefly explain the two phase locking protocol used in concurrency control. **(10 Marks)**

b. Explain the following with an example :

i) NO – UNDO / REDO Recovery based on deferred update.

ii) Shadow paging. **(10 Marks)**

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