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15CS53

Fifth Semester B.E. Degree Examination, Jan./Feb. 2021 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. What do you mean by Database Management System? Explain the various advantages of using a Database Management System. (10 Marks)
- b. Describe the three schema architecture with block diagram. Why do we need mappings between schema levels? (06 Marks)

OR

- 2 a. Explain DBMS component modules along with a neat diagram. (10 Marks)
- b. Define Entity, Entity set, Attribute with respect to ER model. List different types of attributes along with their symbols. (06 Marks)

Module-2

- 3 a. Discuss the Entity integrity and Referential integrity constraints. Why is each considered important? (06 Marks)
- b. Discuss the following relational algebra operations. Illustrate with an example for each: JOIN, DIFFERENCE, SELECT, UNION. (10 Marks)

OR

- 4 a. Give the E.R to relational mapping algorithm. Discuss each step with an example. (10 Marks)
- b. Explain the following in SQL:
 - i) Unspecified WHERE – clause and use of the Asterisk.
 - ii) Explicit sets and NULLS.
 - iii) Renaming attributes and joined tables. (06 Marks)

Module-3

- 5 a. Considered the following relations for a database that keeps track of business trips of sales persons in a sale office.
SAILORS (SID, SNAME, RATING, AGE)
BOATS (BID, BNAME, COLOR)
RESERVES (SID, BID, DAY).
Specify the following queries in SQL.
 - i) Find the names of sailors who have reserved a red or a green boat.
 - ii) Find the names of sailors who are older than the oldest sailors with a rating of 10.
 - iii) Find sailors whose rating is better than same sailor called "Ramesh". (10 Marks)
- b. How does SQL allow implementation of general integrity constraints? (06 Marks)

OR

- 6 a. Describe the concept of a cursor and how it is used in embedded SQL. (06 Marks)
- b. Explain the term stored procedure and give examples why stored procedures are useful. (05 Marks)
- c. What are the differences between JDBC and SQLJ? (05 Marks)

**Module-4**

- 7 a. Explain any two informal quality measures employed for a relational schema design. (04 Marks)
b. Explain 1NF, 2NF and 3NF with an example for each. (12 Marks)

OR

- 8 a. Define Multivalued dependency. Explain 4NF, with an example. (08 Marks)
b. Define JOIN dependency. Explain 5NF, with an example. (08 Marks)

Module-5

- 9 a. Briefly explain the two phase locking protocol used in concurrency control. (08 Marks)
b. What is Schedule? Illustrate with an example. (05 Marks)
c. What is Shadow paging scheme? Where it is used? (03 Marks)

OR

- 10 a. Discuss the ACID properties of the database transaction. (04 Marks)
b. What is Time stamping? Explain a mechanism of concurrency control that uses time stamping with the help of an example. (08 Marks)
c. Write a note on Write ahead log protocol. (04 Marks)
