CBCS SCHEME

USN

16/17MCA23

Second Semester MCA Degree Examination, Dec.2019/Jan.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. What is DBMS? Describe the characteristics of database approach. **(08 Marks)**
b. With a neat diagram, explain the DBMS component modules. **(08 Marks)**

OR

2 a. List and explain any 5 advantages of using DBMS approach. **(06 Marks)**
b. Explain the centralized DBMS architecture. **(04 Marks)**
c. Define cardinality ratio and participation constraints. **(06 Marks)**

Module-2

3 a. Define domains, attributes, tuples and relations. **(06 Marks)**
b. Discuss about SELECT and PROJECT operations with examples. **(06 Marks)**
c. Explain the DIVISION operation with example. **(04 Marks)**

OR

4 a. Discuss the join operation and its types. **(06 Marks)**
b. Discuss about domain constraints and key constraints. **(04 Marks)**
c. Consider the following schema.

Employee (emp_no, person_name, street, ecity)

Works_for (emp_no, company_id, salary)

Company (company_id, company_name, city)

Write the queries in relational algebra for the following :

i) Find the names of employees who works for "WIPRO" company.
ii) Find the names and cities of residence of all employees who works for "INFOSYS"
iii) Find the names, street address and cities of residence of all employees who work for "TCS" and earn more than Rs. 10,00,000 per annum
iv) Find the names of employees in this database who live in the same city as the company for which they work. **(06 Marks)**

Module-3

5 a. Discuss the use of ALTER command in SQL. **(06 Marks)**
b. Suggest when to use GROUP BY and HAVING clauses. **(06 Marks)**
c. What is a view? Explain. **(04 Marks)**

OR

6 a. Write a note on embedded SQL. **(03 Marks)**

b. List and explain the aggregate functions in SQL. **(05 Marks)**

c. Consider the following schema :

BRANCH (Branchid, Branchname, HOD)

STUDENT (USN, Name, Address, Branchid, Sem)

BOOK (Bookid, Bookname, Authorid, Publisher, Branchid)

AUTHOR (Authorid, Authorname, Country, Age)

BORROW (USN, Bookid, Borrowed_date)

Write the SQL queries for the following :

i) List the students who have not borrowed any books

ii) Display the USN, student name, branch name, book name, author name, books borrowed data of 4th sem MCA students

iii) Display the student details who borrowed more than 3 books

iv) List the details of students who borrowed books which are all published by the same publisher. **(08 Marks)**

Module-4

7 a. Discuss the informal design guidelines for relational schema. **(06 Marks)**

b. Define functional dependency. List the inference rules for the same. **(06 Marks)**

c. What is Boyce Codd Normal form? Explain. **(04 Marks)**

OR

8 a. Briefly explain the 1st, 2nd and 3rd normal forms. **(08 Marks)**

b. Write a note on database stored procedures and Triggers. **(08 Marks)**

Module-5

9 a. Discuss the desirable properties of transactions. **(08 Marks)**

b. Explain the importance of strict two phase locking. **(08 Marks)**

OR

10 a. What is deadlock? How it can be handled in transaction processing? **(08 Marks)**

b. Discuss the different methods of crash recovery. **(08 Marks)**

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