Sanjay Ghodawat University, Kolhapur

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2019-20

EXM/P/10/0

**Year and Program:2019-20** **School of Technology** **Department of SY B.Tech Computer Science and Engineeri**

**Course Code: CST206** **Course Title: Database Management System** **Semester – IV**

**Time:**

**Day and Date:** Tuesday 31/12/19 **End Semester Examination (ESE)** **Max Marks: 100**

10.30 am - 1.30 pm

**Instructions:**
1) All questions are compulsory.
2) Assume suitable data wherever necessary.
3) Figures to the right indicate full marks.

| | | Marks | Bloom's Level | CO |
|---|---|---|---|---|
| Q.1 | | | | |
| a) | Describe different views in database with a block diagram and explain logical and physical data independence. | 07 | L1 | CO1, CO3 |
| | OR | | | |
| a) | List various symbols used in ER diagrams and explain with any example ER diagram, following concepts. Entities, attributes, possible constraints, primary key and foreign keys. | 07 | L1 | CO1, CO3 |
| b) | Describe a general structure of creating a trigger with an example of trigger on insert or delete operations. | 08 | L2 | CO5 |
| | OR | | | |
| b) | Illustrate different operations in relational algebra with suitable example. | 08 | L2 | CO1 |
| Q.2 | | | | |
| a) | Explain the terms normalization, functional dependency and inference rules with appropriate examples. | 07 | L1 | CO3 |
| | OR | | | |
| a) | State the rules of 1NF, 2NF, 3NF and BCNF. Explain the need of each type of normalization. | 07 | L1 | CO4 |
| b) | Write the following queries in SQL, using the schema given below.<br>Course(Course_id,Title,Dept_name,Credits)<br>Instructor(ID,Name,Dept_name,Salary)<br>1. Query to select highest salary in in Comp.Sci dept.<br>2. Query to display the names of instructors with salary greater than that of some (at least one) instructor in the Biology department.<br>3. Query to display names of courses having highest credits assigned | 08 | L3 | CO3 |



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to them.

4. Query to display the total credits of the program, which includes all the course credits.

OR

| | | | | | |
|---|---|---|---|---|---|
| | b) | Demonstrate with an example, application of 2 phase locking protocol. | 08 | L3 | CO2 |
| Q.3 | **Solve any Two** | | | | |
| | a) | Define hashing and explain the rules for ideal hash function | 08 | L1 | CO1 |
| | b) | Summarize the properties of dense and sparse indices. Provide examples wherever necessary. | 08 | L2 | CO2 |
| | c) | Write a PL SQL function to compute the factorial of a number using recursion. | 08 | L3 | CO5 |
| Q.4 | **Solve any Two** | | | | |
| | a) | Describe any five constraints that are used in DBMS schema creation. | 09 | L2 | CO2 |
| | b) | Illustrate ACID properties of DBMS transactions with examples. | 09 | L3 | CO2 |
| | c) | Write a procedure to perform Fibonacci series in PL/SQL. | 09 | L3 | CO4 |
| Q.5 | **Solve any Two** | | | | |
| | a) | Explain the need and frequency at which checkpoints to be performed. | 09 | L2 | CO2 |
| | b) | Demonstrate with an example how bitmap indexing is performed. | 09 | L4 | CO4 |
| | c) | Describe the states of a transaction. | 09 | L2 | CO6 |
| Q.6 | **Solve any Three** | | | | |
| | a) | Explain in detail about shadow paging. | 06 | L2 | CO2 |
| | b) | Explain the concept of recovery algorithm. | 06 | L2 | CO4 |
| | c) | Explain the different types of metadata that a data dictionary stores. | 06 | L2 | CO6 |
| | d) | Describe the different buffer replacement methods followed by operating system. | 06 | L2 | CO6 |



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