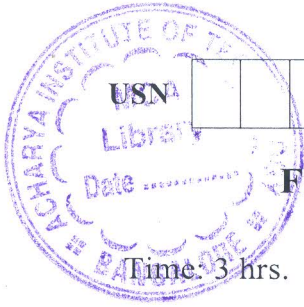


CBCS SCHEME



15CS53

Fifth Semester B.E. Degree Examination, Jan./Feb. 2023 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. Explain the component modules of DBMS and their interactions with a neat diagram. (08 Marks)
- b. Write an ER diagram of hospital management system. Assume your own entities, attributes and relations. Mention the specifications also. (08 Marks)

OR

- 2 a. Illustrate "three schema architecture" with a neat diagram. (06 Marks)
- b. Define the following terms with example :
 - (i) Data model
 - (ii) Complex attribute.
 - (iii) Recursive relationship
 - (iv) Meta data.
 - (v) Composite attribute. (10 Marks)

Module-2

- 3 a. Explain any four relational algebra operations with examples. (08 Marks)
- b. Write the relational algebra queries to perform the following on "Company database".
 - (i) Retrieve the name and address of all employees who work for "Research" department.
 - (ii) Retrieve the names of employees, who have no dependants. (08 Marks)

OR

- 4 a. Explain the different constraints that can be applied during table creation in SQL, with an example. (08 Marks)
- b. Design the SQL queries for the following database schema :
Works(Pname, Cname, Salary)
Lives(Pname, Street, City)
Located_in(Cname, Lcity)
Manager(Pname, Mgrname)
 - (i) Find the names of all persons who lives in the city "Bengaluru".
 - (ii) Find the names of all persons who lives and work in same city.
 - (iii) Find the sum of salaries of persons working in "wipro" company.
 - (iv) Find the names of all persons who work in "Infosys" and salary is between Rs.50,000 and Rs.90,000. (08 Marks)

Module-3

- 5 a. Define view. Illustrate creation of view with an example. (04 Marks)
- b. Explain stored procedure and its advantages. Give an example for creation of stored procedure. (06 Marks)
- c. Explain the classification of four types of JDBC drivers. (06 Marks)

OR

- 6 a. Explain a standard three-tier architecture, with a neat sketch. (08 Marks)
b. Define cursor. Mention its advantages. Explain the general form of a cursor declaration. (08 Marks)

Module-4

- 7 a. Explain the informal design guidelines for creating the relation schema. (08 Marks)
b. Define normalization. Explain 1NF and 2NF with suitable examples. (08 Marks)

OR

- 8 a. Write an algorithm to find minimal cover of functional dependencies. Explain with an example. (10 Marks)
b. Consider the two set of FD's,
 $F_1 : \{A \rightarrow B, AB \rightarrow C, D \rightarrow AC, D \rightarrow E\}$ and $F_2 : \{A \rightarrow BC, D \rightarrow AE\}$ for the relations
 $R = \{A, B, C, D, E\}$. Check whether the two FD's are equivalent or not. Justify your answer. (06 Marks)

Module-5

- 9 a. Explain the ACID properties of a transaction. Also explain why concurrency control is needed. (10 Marks)
b. Write a short note on deadlock, starvation and prevention. (06 Marks)

OR

- 10 a. Explain two phase locking protocol used in concurrency control. (08 Marks)
b. Illustrate the three phases of ARIES recovery model. (08 Marks)
