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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Eighth Semester, B.E. - Computer Science and Engineering

Semester End Examination; May/June - 2019

Database Management System

Time: 3 hrs *Max. Marks: 100*

Note: *i) Answer **FIVE** full questions, selecting **ONE** full question from each unit.*

ii) Missing data, if any, may be suitably assumed.

UNIT - I

1 a.	With a neat diagram, explain the three-schema architecture and data independence in detail.	8
b.	Define DBMS. List and explain the advantages of DBMS approach.	12
2 a.	List and explain the characteristics of DBMS.	8
b.	Explain the different database languages in detail.	6
c.	Explain database interfaces in detail.	6

UNIT - II

3 a.	Explain high-level conceptual data models for database design in detail.	10
b.	Design an ER-diagram for keeping track of information about LIBRARY database. Consider the following entities : i) Book ii) Publisher iii) Member iv) Supplier Identify suitable attributes for each entities and also relationships between these entities.	10
4 a.	Explain the following : i) Composite versus simple attributes ii) Single-valued versus Multi-valued attributes iii) Stored versus Derived attributes	9
b.	With an example, explain the cardinality ratios for binary relationship.	6
c.	Explain different notations used in ER-diagram.	5

UNIT - III

5 a.	Explain the following : i) Domain constraints ii) Entity integrity constraints iii) Constraints on NULL values iv) Referential integrity constraints	8
b.	Explain relational algebra operations for set theory with example.	6
c.	Explain SELECT and PROJECT operations in detail.	6
6 a.	Differentiate between EQUI JOIN and NATURAL JOIN.	6
b.	Explain OUTER JOIN and DIVISION operation in detail.	10
c.	Explain aggregate functions in detail.	4

Contd…2

UNIT - IV

7 a. List and explain attribute data types and domains in SQL. 10

b. Consider the following relations for a database that keeps track of business trips of sales persons in a sales office :

SAILORS(SID, SNAME, RATING, AGE)

BOATS (BID, BNAME, COLOUR)

RESERVES (SID, BID, DAY) 10

Specify the following queries in SQL :

i) Find the names of sailors who have reserved a red boat

ii) Find the names of sailors who have reserved a red or a green boat

iii) Find the names of sailors who have reserved all boats called "Interlake"

8 a. With an example explain the following : 10

i) GROUP BY clauses ii) HAVING clauses iii) ORDER BY clauses

b. Consider the following relational database schema :

Student (student_id, sname, major, CGPA)

Faculty (faculty_id, fname, department, designation, salary)

Course (course_id, cname, faculty_id)

Enroll (course_id, student_id, grade)

Write the following Queries in SQL : 10

i) List the names of all students enrolled for the course "CS-53"

ii) List the names of students enrolled from the course "CS-53" and have received "A" grade

iii) List all the departments having an average salary of above Rs. 20,000

iv) Give a 15% raise to salary for all faculty

v) List the names of all faculty members beginning with "R" and ending with letter "U"

UNIT - V

9 a. Explain 1NF and 3NF with suitable example. 10

b. Explain the informal design guidelines for relational schema with suitable example. 10

10 a. Explain 2NF and BCNF with suitable example. 10

b. Define functional dependency. Explain the influence rules for functional dependencies in detail. 10

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