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

(An Autonomous Institution affiliated to VTU, Belgaum)

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

Semester End Examination; Dec. - 2015

Data Base Management System

Time: 3 hrs *Max. Marks: 100*

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

UNIT - I

1 a. Explain the advantages of using the DBMS approach. 8

b. Explain the three schema architecture with a neat block diagram. 8

c. What is Data independence? Define logical data independence and physical data independence. 4

2 a. Write an ER diagram for Bank data base. 8

b. Explain the different types of attributes with example. 8

c. Define the followings with example : 4

i) Participation constraints ii) Recursive relationship

UNIT - II

3 a. Consider The Following Relations For A Database Company that Keeps track of Employee, Working Department, the Project and their Dependents:

EMPLOYEE (Fname, Minit, Lname, SSn, Bdate, Address, Sex, Salary, Super_SSn, Dno)

DEPARTMENT (Dname, Dnumber, Mgr_ssn, Mgr_strat_date)

DEPT_LOCATIONS (Dnumber, Dlocation)

PROJECT (Pname, Pnumber, Plocation, dnum)

WORKS_ON (Essn, Pno, Hours)

DEPENDENT (Essn, Dependent name, Sex, Bdate, Relationship) 6

Write the following queries in relational algebra,

i) Retrieve the name and address of all employees who work for the 'Research' department.

ii) For every project located in 'Stafford', list the project number, the controlling department number, and the department manager's last name, address, and birth data.

b. Describe the steps of an algorithm for ER-to-relational mapping. 10

c. What are the aggregate functions used in relation algebra? 4

4 a. Explain the following relational algebra operations with example: 8

i) Natural join ii) Outer join operations.

b. Explain entity integrity, referential integrity constraints with example. 8

c. What are the characteristics of relation? 4

Contd…2

UNIT - III

5	a.	Explain ambiguous attributes names, aliasing, Nested queries, Having clause with example.	12
	b.	Explain the concept of a view in SQL with example.	8
6	a.	What are the different data types in SQL?	4
	b.	Explain insert, delete, update statements in SQL with example.	8
	c.	Explain EXISTS and unique function in SQL with example.	8

UNIT - IV

7	a.	Explain the informal design guidelines for relation schemas.	12
	b.	Write an algorithm for finding a minimal cover F for a set of functional dependencies E given a set of FDS. E :{B $\rightarrow$A, D $\rightarrow$A, AB$\rightarrow$D} Find minimal cover of E.	8
8	a.	Explain 1NF, 2NF with example.	10
	b.	Explain multi valued dependency and fourth normal form with example.	10

UNIT - V

9	a.	Why Recovery is needed? Explain the types of failures.	10
	b.	Explain a state transition diagram.	10
10	a.	Explain two-phase locking techniques for concurrency control.	12
	b.	Explain the desirable properties of transaction.	8

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