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

(An Autonomous Institution affiliated to VTU, Belgaum)

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

Semester End Examination, Dec. - 2014

Data Base Management System

Time: 3 hrs *Max. Marks: 100*

***Note**: Answer any **FIVE** full questions, selecting at least **TWO** full questions from each part.*

PART - A

1. a. Explain the characteristics of the Database approach 5

   b. With a neat diagram, explain three-schema architecture and also explain the Data-independence. 7

   c. Discuss the different types of user- friendly interfaces and types of users who typically use each. 8

2. a. Explain different types of attributes along with the notations used in ER model. Distinguish the following: 7

   i) strong entity ii) weak entity iii) discrimination.

   b. What is cardinality ratio? Explain the different types of cardinality ratio in a binary relationship. 4

   c. Draw a ER diagram to show the cricket team statistics, by considering the following information: 9

   i) Match ii) Player iii) Team-clearly indicate the different cardinality mapping and translate the same also into and relational scheme.

3. a. Explain the domains integrity and referential integrity constraints. Why is each considered important. 7

   b. Discuss with examples the following relational algebra operations with an example for each and different types of join operations i) Project ii) Minus iii) Division. 9

   c. What is the difference between candidate key and a super key? 4

4. a. With respect to SQL, explain the ALTER command with example. 6

   b. Explain the GROUP BY and HAVING clauses with examples. 6

   c. Consider the following relational database schema for a LIBRARY database.

   Book (Book id, Title, Publisher name)

   Book_Copies (Bookid, Branchid, No. of _ Copies)

   Book_loans (Bookid, Branchid, Card no. Date out, Due date) 8

   Library_Branch (Branchid, Branchname, Address)

   Borrower (Cardno, Name, Address, Phone)

Contd…2

Write the SQL queries for the following:

(i) How many copies of the book title "The Lost Tribe" and owned by the Library branch whose name is "sharp town"?

(ii) Retrieve the names of all borrowers who do not have any books checked out.

(iii) How many copies of book titled "The Lost Tribe" are owned by each Library branch?

(iv) For each library branch, retrieve the branch name and the total no. of books loaned out from that branch.

PART - B

5	a.	Discuss insertion, deletion, and modification anomalies. Why are they considered bad? Illustrate with examples.	8
	b.	Define normalization. Also explain second and third normal forms with example for each.	8
	c.	Consider the universal relation R={A,B,C,D,E,F,G,H,I,J} and set of F.D F= {A, B}→C, A→{D, E}, B→F, F→{G, H} D→{I, J} What is the key of R?	4
6	a.	Explain Non additive (Loss less) Join property of Decomposition.	6
	b.	Explain Join dependency and fifth normal form with an example.	10
	c.	Given two sets F_1 and F_2 of FDs for a relation F_1: A→B, AB→C, D→AC, D→E F_2: A→BC, D→AE Are the two sets equivalent?	4
7	a.	Explain properties of a transaction with state transition diagram.	10
	b.	Explain the following concepts in transaction dirty read, non repeatable read and lost update with example.	10
8	a.	Discuss the problem of deadlock and starvation. Explain different approaches in dealing with these problems.	10
	b.	Discuss the immediate update recovery technique in both single –use and multi-user environments.	10

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