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Siddaganga Institute of Technology, Tumkur – 572 103

(An Autonomous Institution under Visvesvaraya Technological University, Belgaum)

Sixth Semester B.E. Information Science & Engg. Examinations May-June 2011

Database Management System

Time: 3 Hours **Max. Marks: 100**

Note: 1. Question No. 1 is Compulsory
2. Answer any 4 full questions from question No. 2 to Question No. 6

1 a) Define Data model.
b) _____ handles database access at run time.
c) The constraint which specifies the minimum number of relationship instances that each entity participate in, is _____ .
d) In DROP TABLE command,_____ option is used to drop table only if it is not referenced in any other constraint.
e) What is prime attribute?
f) _____ are the persons who design and implement DBMS modules and interfaces as a software package.
g) Define log.
h) What is Relationship type?
i) What are spurious tuples?
j) What are virtual tables?
k) _____ is the relationship type that relates to weak entity to its owners.
l) Define participation constraints.
m) What is null valued attribute?
n) What is Checkpointing?
o) What is WAL?
p) What is join selectivity?
q) Displayed schema is called as_____ .
r) Data in a database at a particular moment in time is called as_____ .
s) Define transaction.
t) What is Write-Read conflict? 1 ▪ 20

2 a) Define DBMS. What are the characteristics of database approach? 6

b) Consider the relational database of the following schema.
LIVES(p_name, street, city) WORKS(p_name, c_name, salary)
LOCATION(c_name, city) MANAGES(p_name, mgr_name)
Give an expression in the **relational algebra** for each query.

(i) Retrieve all the person names who live in BANGALORE.
(ii) Retrieve the name and salary of all the persons who work for the company 'HP'.
(iii) List the names of the persons working for HP along with the cities they live in.
(iv) Find the names of the persons who live and work in the same city.
(v) Retrieve the city where INFOSYS is located.
(vi) Display all the employees who live in "Bangalore" and works for "Intel". 6

c) Explain database system environment with the help of a neat diagram. 8

Please Turn Over

3 a) Explain any four types of join operations in SQL, with an example for each. 8

b) For below EMPLOYEE database, Solve these queries using SQL**.**

EMPLOYEE(Name, ssn, Address, sex, salary, dno)
DEPARTMENT(Dname, Dnum, Mgrssn, Mgrstartdate)
DEPARTMENT_LOCS(Dnum, Dloc)
PROJECT(Pname, Pnum, Ploc, Dnum)
WORKS_ON(essn, pno ,hrs)
DEPENDENT(essn, Dep_name, Sex, Bdate, Relation)

(i) Retrieve all employees who live in 'tumkur'.
(ii) Show the resulting salaries if every employee working on the 'Research' project is given a 10 percent raise.
(iii) Display department number, name of an employee, and project number for all the employees who work on projects which belong to their department.
(iv) Display all the employees who have 2 or more dependents. 8

c) Define physical and logical data independence. 4

4 a) Explain specification, implementation and update of views in SQL with example. 8

b) Explain database programming issues and techniques. 6

c) What are database stored procedures? Give general forms for declaring a procedure and function. 6

5 a) Write an ER diagram for hospital management system. Assume your own entities (minimum of 5 entities), attributes and relationships. Mention cardinality ratio. 8

b) Explain 1NF and 2NF form with an example for each. 6

c) Explain 4NF with an example. Write an algorithm for relational decomposition into 4NF relation with non -additive join property. 6

6 a) What are conflict equivalent and serializable schedules? Explain strict 2PL. 8

b) Explain all the phases of ARIES algorithm. 6

c) Explain how grant and revoke commands support discretionary access control. 6
