B.Tech. – VIEP – COMPUTER SCIENCE AND ENGINEERING (BTCSVI)

Term-End Examination

December, 2014

00366

BICS-011 : DATABASE MANAGEMENT SYSTEM

Time : 3 hours   *Maximum Marks : 70*

Note : *All questions are* **compulsory.**

1. (a) What is 3-schema architecture ? Explain logical and physical data independence. **5**

    (b) Give the relational schema R (ABCDE) and a functional dependency

    $$FD = \{A \to B, \ C \to D, \ D \to E\}$$

    (i)   What is candidate key ?

    (ii) What normal form is in it ? Explain.

    $$2\frac{1}{2} + 2\frac{1}{2} = 5$$

2. (a) Differentiate between : $2\frac{1}{2} + 2\frac{1}{2} = 5$

    (i)   Stored versus derived attributes

    (ii) Strong versus weak entity

    (b) What are the different types of cardinality constraints ? Explain each with example. *2+3=5*

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3. (a) What is functional dependency ? Explain full, partial and transitive functional dependency. *2+3=5*

(b) What are primary key, candidate key and super key ? Explain using suitable examples. *5*

4. What is relational model ? Write down the steps for converting ER model to relational model, with example. *10*

5. (a) What is transaction of DBMS ? Explain the ACID property of transaction. *5*

(b) What are the different states of a transaction ? *5*

6. (a) What is cascading schedule ? How can deadlock be detected ? *2+3=5*

(b) What is SQL ? *1+2+2=5*

Consider the following schema :

Supplier (sid : integer, sname : string, address : string)

Parts (pid : integer, pname : string, colors : string)

Calalog (sid : integer, pid : integer, cost : real)

Write down the following queries in SQL :

(i) Find the names of suppliers who supply some red part.

(ii) Find the sid of suppliers who supply some red or green part.

7. (a) Define these terms in brief : 5

(i) FD

(ii) Ist normal form

(iii) BCNF

(iv) 2PL

(v) Timestamp

(b) What is the phantom problem ? Can it occur in a database, where the set of database objects is fixed and only the values of object can be changed ? 5

OR

Write short notes on any *two* of the following : 2×5=10

(a) Relational Calculus

(b) Generalisation

(c) Deadlock