NEW

2017

BCA 3rd Semester Examination

DATABASE MANAGEMENT SYSTEM

PAPER—2104

Full Marks : 70

Time : 3 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Answer Q. No. *1* and any *four* from the rest.

1. Answer any *five* questions : 5×2

(a) What is referential integrity ?

(b) What are the different types of database ?

(c) What is derived attribute ? Give examples.

(d) What is the use of UPDATE Command ? Explain with examples.

(e) Differentiate between procedural and non-procedural language.

(f) What do you mean by degree of a relationship ?

(g) Define Theta Join with exemption.

2. (a) What is the difference between DELETE, TRUNCATE and DROP Statement in SQL ?

(b) Illustrate the usage of GROUPBY, ORDERBY and HAVING clauses.

(c) Define 2NF, 3NF, BCNF with proper example. 5+5+5

3. (a) Consider the following relation R(A, B, C, D, E) and FD's are {A → BC, C → A, D → E, F → A, E → D} is the decomposition of R into R_1(A, C, D), R_2(B, C, D) and R_3(E, F, D) is lossless ? Justify.

(b) Explain the role of minimal cover for set of FDs in 3rd normal form.

(c) What is multivalued dependency ? What is the need of indexing in DBMS. 5+5+(2+3)

4. (a) Explain ACID properties.

   (b) Define E-R model. What is an entity ? What is multivalued attribute ?

   (c) Explain aggregation, specialization in E-R diagram.

5+5+5

5. (a) Consider the following schemas :

   Sailors (Sid, Sname, rating, age)
   Reserves (Sid, bid, day)
   Boats (bid, bname, color)

   Write the following queries in relational algebra

   (i) Find the name of Sailors who have reserved boat no. 125.

   (ii) Find the name and age of the Sailors who has a rating above 8.

   (iii) Find the name of the Sailors who have reserved a "red" boat.

   (iv) Find the name of sailors who have reserved at least one boat.

   (b) Discuss abstract view of data with diagram.

$(2\frac{1}{2} \times 4)+5$

6. (a) What is a data model ? Describe three layers architechture of DBMS ?

   (b) What are the differences between logical data independence and physical data independence ?

   (c) What are the major functions of the database administrator ?

   (d) Define the following terms :
   Primary Key, Composite Key and Unique Key.

(3+3)+3+3+3

7. Write short notes on the following (any *three*) : 3×5

   (a) B-tree ;

   (b) Dependency preserving decomposition ;

   (c) Hierarchical model ;

   (d) DDL.

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