2013

Time: 3 hours
Full Marks: 80

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

The figures in the margin indicate full marks.

Answer from both the Groups as directed.

Group – A

(Objective Type Questions)

Answer all questions.

1. Choose the correct answer of the following:

\[ 2 \times 10 = 20 \]

(a) Which of the following is an advantage of using database system?

(i) Security enforcement

(ii) Avoidance of redundancy

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(Turn over)
(iii) Reduced inconsistency
(iv) All of the above

(b) What is the RDBMS terminology for a table?
(i) Tuple
(ii) Relation
(iii) Attribute
(iv) Domain

(c) Which of the following aspects of data is the concern of a relational database model?
(i) Data manipulation
(ii) Data integrity
(iii) Data structure
(iv) All of the above

(d) Relational Algebra is:
(i) Meta language
(ii) Non-procedural language
(iii) Data definition language
(iv) Procedural query language
(e) To get a specific tuples from a relation operation is used:

(i) Intersect
(ii) Minus
(iii) Select
(iv) Project

(f) operation is used to update data in a database.

(i) Save as
(ii) Save
(iii) Update
(iv) Modify

(g) The association between the two entities is called:

(i) Recursive relationship
(ii) Ternary relationship
(iii) Binary relationship
(iv) None of these

(h) 2NF is always in:

(i) BCNF
(ii) MVD

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(iii) 1NF
(iv) None of these

(i) ________ key is used to specify a referential integrity constraint in a relational database.

(i) Primary
(ii) Foreign
(iii) Candidate
(iv) None of these

(i) The concurrency control has the problem:
   (i) Lost updates
   (ii) Dirty read
   (iii) Unrepeatable read
   (iv) All of the above

Group – B

(Long-answer Type Questions)

Answer any four questions of the following:

2. What is data dictionary? Explain its function with a neat diagram.
3. What do you mean by redundancy? What is the difference between controlled and uncontrolled redundancy? Illustrate with example.  

4. What do you mean by relational algebra? Define all the operations of relational algebra.  

5. (a) Give the purpose of VIEW operation in SQL? Explain, how it is created.  
     (b) Explain the term referential integrity constraints with suitable examples.  

6. (a) Explain, in brief, the various types of Data Models.  
     (b) Explain the architecture of DBMS with the help of diagram.  

7. Construct an ER diagram for a hospital management system with a set of doctors and a set of patients. With each patient, a series of various tests and examinations are conducted. On the basis of preliminary report patients are admitted to a particular specialty ward.  

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8. (a) What do you understand by the term normalization? Describe the data normalization process. What does it accomplish? 8

(b) Describe the characteristics of a relation in un-normalized form. How is such a relation converted to 1NF? 7

9. Explain the concept of join dependency and describe, how this concept relates to 5NF. Provide an example to explain your answer. 15

10. (a) Give the purpose and scope of database security. 7

(b) Explain the following terms, in brief, in terms of security in database:

(i) Authorization

(ii) Views

(iii) Backup and recovery

(iv) Integrity

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