

2011

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 :

2×10 = 20

(a) _____ is known as Super-user of the system.

(i) System Programmer

- (ii) Database Administrator
 - (iii) Application Programmer
 - (iv) None of the above
- (b) In _____ model, a parent can have several children and a child can have many parent records.
- (i) Hierarchical model
 - (ii) Relational model
 - (iii) Network model
 - (iv) Object model
- (c) _____ is a common method for making retrievals faster.
- (i) Clustering
 - (ii) Hashing
 - (iii) Indexing
 - (iv) All of the above
- (d) _____ is used to retrieve specific tuples / rows from a relation.
- (i) Project
 - (ii) Select

- (iii) Union
 - (iv) Intersect
- (e) Application logic consists of :
- (i) Presentation logic
 - (ii) Processing logic
 - (iii) Storage logic
 - (iv) All of the above
- (f) _____ occurs when the structure of the database can change without requiring programs that access the database to change.
- (i) Database dependence
 - (ii) Data independence
 - (iii) Data integrity
 - (iv) Data consistency
- (g) The three levels of database architecture are :
- (i) External view
 - (ii) Conceptual view
 - (iii) Internal view
 - (iv) System view

(h) A _____ is considered to be a two-dimensional object having two components, one corresponds to vertical and other to horizontal.

- (i) Tuple
- (ii) Attribute
- (iii) Relation
- (iv) All of the above

(i) _____ entities are entities use to associate two or more entities in order to reconcile a many-to-many relationship.

- (i) Dissociative
- (ii) Associative
- (iii) Attribute
- (iv) None of the above

(i) _____ relationship is when instance of entity A, there are zero, one, or many instance of entity B, but for one instance of entity B, there is only one instance of entity A.

- (i) One-to-one
- (ii) One-to-many
- (iii) Many-to-many
- (iv) None of the above

Group – B

(Long-answer Type Questions)

Answer any four of the following :

2. (a) What are Database Systems ? List out its characteristics. 8
- (b) What are logical levels is used in data abstraction ? 7
3. (a) What is a data dictionary ? What are the information stored in the data dictionary ? What are the benefits of data dictionary ? Who are the users of data dictionary ? 8
- (b) What is meant by an Instance of the database and schema ? What is the purpose of Meta data ? 7
4. (a) What are the key and non-key attributes ? What is the relationship between entities and attributes ? 8
- (b) What is E-R modeling ? What are candidate key, primary key, alternate key and foreign key ? Give examples. 7

5. (a) What are the domain constraints ? What is entity integrity and referential integrity ? Give an example. 8
- (b) What is meant by a unary and binary operation ? How 'Natural-Join' operation is performed ? 7
6. (a) Differentiate between Cartesian product and natural join operations used in relational algebra. How does the domain relational calculus differ from tuple relational calculus ? 8
- (b) Define Network database model. What are the two different categories of query languages ? 7
7. (a) Draw the ER diagram for hospital management system. 8
- (b) Explain the 3 schema architecture of DBS. Why do we need mappings between different schema levels ? How do different schema definition languages support this architecture ? 7

8. (a) What is embedded SQL ? What are the advantages of embedded SQL programs ? 8

(b) What are DDL commands, DML commands and DCL commands ? Give examples. 7

9. (a) What is a multi-value dependency, transitive dependency and partial dependency ? 8

(b) What are Armstrong's axioms ? Compare BCNF and 3NF. 7

10. Consider the following table :

Employee (Emp-no, Name, Emp-city)

Company (Emp-no, Company-name, Salary)

(a) Write a SQL query to display Employee name and Company name. 8

(b) Write a SQL query to display Employee name, Employee city, Company name and Salary of all the employees whose salary > 10,000. 7

