

## DBMS Question Bank

### Database Management System

Set – 1

1. A relational database consists of a collection of
- Tables
  - Fields
  - Records
  - Keys

Answer: a

Explanation: Fields are the column of the relation or tables. Records are each row in a relation. Keys are the constraints in a relation.

2. A \_\_\_\_\_ in a table represents a relationship among a set of values.
- Column
  - Key
  - Row
  - Entry

Answer: c

Explanation: Column has only one set of values. Keys are constraints and row is one whole set of attributes. Entry is just a piece of data.

3. The term \_\_\_\_\_ is used to refer to a row.
- Attribute
  - Tuple
  - Field
  - Instance

Answer: b

Explanation: Tuple is one entry of the relation with several attributes which are fields.

4. The term attribute refers to a \_\_\_\_\_ of a table.
- Record
  - Column
  - Tuple
  - Key

Answer: b

Explanation: Attribute is a specific domain in the relation which has entries of all tuples.

5. For each attribute of a relation, there is a set of permitted values, called the \_\_\_\_\_ of that attribute.
- Domain
  - Relation
  - Set
  - Schema

Answer: a

Explanation: The values of the attribute should be present in the domain. Domain is a set of values permitted.

6. Database \_\_\_\_\_ which is the logical design of the database, and the database \_\_\_\_\_ which is a snapshot of the data in the database at a given

instant in time.

- a. Instance, Schema
- b. Relation, Schema
- c. Relation, Domain
- d. Schema, Instance

Answer: d

Explanation: Instance is an instance of time and schema is a representation.

7. Course(course\_id,sec\_id,semester)

Here the course\_id,sec\_id and semester are\_\_\_\_\_and course is a

- a. Relations, Attribute
- b. Attributes, Relation
- c. Tuple, Relation
- d. Tuple, Attributes

Answer: b

Explanation: The relation course has a set of attributes

course\_id,sec\_id,semester .

8. Department (dept name, building, budget. and Employee (employee\_id, name, dept name, salary)

Here the dept\_name attribute appears in both the relations. Here using common attributes in relation schema is one way of relating\_\_\_\_\_relations.

- a. Attributes of common
- b. Tuple of common
- c. Tuple of distinct
- d. Attributes of distinct

Answer: c

Explanation: Here the relations are connected by the common attributes.

9. A domain is atomic if elements of the domain are considered to be \_\_\_\_\_units.

- a. Different
- b. Indivisible
- c. Constant
- d. Divisible

Answer: b

Explanation: None.

10. The tuples of the relations can be of\_\_\_\_\_order.

- a. Any
- b. Same
- c. Sorted
- d. Constant

Answer: a

Explanation: The values only count. The order of the tuples does not matter.

Set – 2

1. Using which language can a user request information from a database?

- a. Query
- b. Relational
- c. Structural

d. Compiler

Answer: a

Explanation: Query language is a method through which the database entries can be accessed.

2. Student(ID, name, dept name, tot\_cred)

In this query which attributes form the primary key?

- a. Name
- b. Dept
- c. Tot\_cred
- d. ID

Answer: d

Explanation: The attributes name, dept and tot\_cred can have same values unlike ID.

3. Which one of the following is a procedural language?

- a. Domain relational calculus
- b. Tuple relational calculus
- c. Relational algebra
- d. Query language

Answer: c

Explanation: Domain and Tuple relational calculus are non-procedural language. Query language is a method through which database entries can be accessed.

4. The\_\_\_\_\_operation allows the combining of two relations by merging pairs of tuples, one from each relation, into a single tuple.

- a. Select
- b. Join
- c. Union
- d. Intersection

Answer: b

Explanation: Join finds the common tuple in the relations and combines it.

5. The result which operation contains all pairs of tuples from the two relations, regardless of whether their attribute values match.

- a. Join
- b. Cartesian product
- c. Intersection
- d. Set difference

Answer: b

Explanation: Cartesian product is the multiplication of all the values in the attributes.

6. The\_\_\_\_\_operation performs a set union of two “similarly structured” tables

- a. Union
- b. Join
- c. Product
- d. Intersect

Answer: a

Explanation: Union just combines all the values of relations of same attributes.

7. The most commonly used operation in relational algebra for projecting a set of tuple from a relation is

- a. Join
- b. Projection
- c. Select
- d. Union

Answer: c

Explanation: Select is used to view the tuples of the relation with or without some constraints.

8. The \_\_\_\_\_ operator takes the results of two queries and returns only rows that appear in both result sets.

- a. Union
- b. Intersect
- c. Difference
- d. Projection

Answer: b

Explanation: The union operator gives the result which is the union of two queries and difference is the one where query which is not a part of second query.

9. A \_\_\_\_\_ is a pictorial depiction of the schema of a database that shows the relations in the database, their attributes, and primary keys and foreign keys.

- a. Schema diagram
- b. Relational algebra
- c. Database diagram
- d. Schema flow

Answer: a

Explanation: None.

10. The \_\_\_\_\_ provides a set of operations that take one or more relations as input and return a relation as an output.

- a. Schematic representation
- b. Relational algebra
- c. Scheme diagram
- d. Relation flow

Answer: b

Explanation: None.

### Set – 3

1. Which one of the following is a set of one or more attributes taken collectively to uniquely identify a record?

- a. Candidate key
- b. Sub key
- c. Super key
- d. Foreign key

Answer: c

Explanation: Super key is the superset of all the keys in a relation.

2. Consider attributes ID, CITY and NAME. Which one of this can be considered as a super key?

- a. NAME
- b. ID

- c. CITY
- d. CITY, ID

Answer: b

Explanation: Here the id is the only attribute which can be taken as a key. Other attributes are not uniquely identified.

3. The subset of a super key is a candidate key under what condition?

- a. No proper subset is a super key
- b. All subsets are super keys
- c. Subset is a super key
- d. Each subset is a super key

Answer: a

Explanation: The subset of a set cannot be the same set. Candidate key is a set from a super key which cannot be the whole of the super set.

4. A \_\_\_\_\_ is a property of the entire relation, rather than of the individual tuples in which each tuple is unique.

- a. Rows
- b. Key
- c. Attribute
- d. Fields

Answer: b

Explanation: Key is the constraint which specifies uniqueness.

5. Which one of the following attribute can be taken as a primary key?

- a. Name
- b. Street
- c. Id
- d. Department

Answer: c

Explanation: The attributes name, street and department can repeat for some tuples. But the id attribute has to be unique. So it forms a primary key.

6. Which one of the following cannot be taken as a primary key?

- a. Id
- b. Register number
- c. Dept\_id
- d. Street

Answer: d

Explanation: Street is the only attribute which can occur more than once.

7. An attribute in a relation is a foreign key if the \_\_\_\_\_ key from one relation is used as an attribute in that relation.

- a. Candidate
- b. Primary
- c. Super
- d. Sub

Answer: b

Explanation: The primary key has to be referred in the other relation to form a foreign key in that relation.

8. The relation with the attribute which is the primary key is referenced in another relation. The relation which has the attribute as a primary key is called

- a. Referential relation
- b. Referencing relation
- c. Referenced relation
- d. Referred relation

Answer: c

Explanation: None.

9. The \_\_\_\_\_ is the one in which the primary key of one relation is used as a normal attribute in another relation.

- a. Referential relation
- b. Referencing relation
- c. Referenced relation
- d. Referred relation

10. A \_\_\_\_\_ integrity constraint requires that the values appearing in specified attributes of any tuple in the referencing relation also appear in specified attributes of at least one tuple in the referenced relation.

- a. Referential
- b. Referencing
- c. Specific
- d. Primary

Answer: a

Explanation: A relation, say r1, may include among its attributes the primary key of another relation, say r2. This attribute is called a foreign key from r1, referencing r2. The relation r1 is also called the referencing relation of the foreign key dependency, and r2 is called the referenced relation of the foreign key.

#### Set – 4

1. Relational Algebra is a \_\_\_\_\_ query language that takes two relations as input and produces another relation as an output of the query.

- a. Relational
- b. Structural
- c. Procedural
- d. Fundamental

Answer: c

Explanation: This language has fundamental and other operations which are used on relations.

2. Which of the following is a fundamental operation in relational algebra?

- a. Set intersection
- b. Natural join
- c. Assignment
- d. None of the mentioned

Answer: d

Explanation: The fundamental operations are select, project, union, set difference, Cartesian product, and rename.

3. Which of the following is used to denote the selection operation in relational algebra?

- a. Pi (Greek.
- b. Sigma (Greek.
- c. Lambda (Greek.
- d. Omega (Greek.

Answer: b

Explanation: The select operation selects tuples that satisfy a given predicate.

4. For select operation the\_\_\_\_\_appear in the subscript and the \_\_\_\_\_argument appears in the paranthesis after the sigma.

- a. Predicates, relation
- b. Relation, Predicates
- c. Operation, Predicates
- d. Relation, Operation

Answer: a

Explanation: None.

5. The\_\_\_\_\_operation, denoted by  $-$ , allows us to find tuples that are in one relation but are not in another.

- a. Union
- b. Set-difference
- c. Difference
- d. Intersection

Answer: b

Explanation: The expression  $r - s$  produces a relation containing those tuples in  $r$  but not in  $s$ .

6. Which is a unary operation:

- a. Selection operation
- b. Primitive operation
- c. Projection operation
- d. Generalized selection

Answer: d

Explanation: Generalization Selection takes only one argument for operation.

7. Which is a join condition contains an equality operator:

- a. Equijoins
- b. Cartesian
- c. Natural
- d. Left

Answer: a

Explanation: None.

8. In precedence of set operators, the expression is evaluated from

- a. Left to left
- b. Left to right
- c. Right to left
- d. From user specification

Answer: b

Explanation: The expression is evaluated from left to right according to the precedence.

9. Which of the following is not outer join?

- a. Left outer join
- b. Right outer join
- c. Full outer join
- d. All of the mentioned

Answer: d

Explanation: The FULL OUTER JOIN keyword combines the result of both LEFT and RIGHT joins.

10. The assignment operator is denoted by

- a. ->
- b. <-
- c. =
- d. ==

Answer: b

Explanation: The result of the expression to the right of the  $\leftarrow$  is assigned to the relation variable on the left of the  $\leftarrow$ .

Set – 5

1. An \_\_\_\_\_ is a set of entities of the same type that share the same properties, or attributes.

- a. Entity set
- b. Attribute set
- c. Relation set
- d. Entity model

Answer: a

Explanation: An entity is a “thing” or “object” in the real world that is distinguishable from all other objects.

2. Entity is a \_\_\_\_\_

- a. Object of relation
- b. Present working model
- c. Thing in real world
- d. Model of relation

Answer: c

Explanation: For example, each person in a university is an entity.

3. The descriptive property possessed by each entity set is \_\_\_\_\_

- a. Entity
- b. Attribute
- c. Relation
- d. Model

Answer: b

Explanation: Possible attributes of the instructor entity set are ID, name, dept name, and salary.

4. The function that an entity plays in a relationship is called that entity's

- 
- a. Participation
  - b. Position
  - c. Role



d. Instance

Answer: c

Explanation: A relationship is an association among several entities.

5. The attribute *name* could be structured as an attribute consisting of first name, middle initial, and last name. This type of attribute is called

- a. Simple attribute
- b. Composite attribute
- c. Multivalued attribute
- d. Derived attribute

Answer: b

Explanation: Composite attributes can be divided into subparts (that is, other attributes..

6. The attribute AGE is calculated from DATE\_OF\_BIRTH. The attribute AGE is

- a. Single valued
- b. Multi valued
- c. Composite
- d. Derived

Answer: d

Explanation: The value for this type of attribute can be derived from the values of other related attributes or entities.

7. Not applicable condition can be represented in relation entry as

- a. NA
- b. 0
- c. NULL
- d. Blank Space

Answer: c

Explanation: NULL always represents that the value is not present.

8. Which of the following can be a multivalued attribute?

- a. Phone\_number
- b. Name
- c. Date\_of\_birth
- d. All of the mentioned

Answer: a

Explanation: Name and Date\_of\_birth cannot hold more than 1 value.

9. Which of the following is a single valued attribute

- a. Register\_number
- b. Address
- c. SUBJECT\_TAKEN
- d. Reference

Answer: a

Explanation: None.

10. In a relation between the entities the type and condition of the relation should be specified. That is called as \_\_\_\_\_ attribute.

- a. Descriptive
- b. Derived
- c. Recursive

d. Relative

Answer: a

Explanation: Consider the entity sets student and section, which participate in a relationship set takes. We may wish to store a descriptive attribute grade with the relationship to record the grade that a student got in the class.

Set – 6

1. \_\_\_\_\_express the number of entities to which another entity can be associated via a relationship set.

- a. Mapping Cardinality
- b. Relational Cardinality
- c. Participation Constraints
- d. None of the mentioned

Answer: a

Explanation: Mapping cardinality is also called as cardinality ratio.

2. An entity in A is associated with at most one entity in B, and an entity in B is associated with at most one entity in A.This is called as

- a. One-to-many
- b. One-to-one
- c. Many-to-many
- d. Many-to-one

Answer: b

Explanation: Here one entity in one set is related to one one entity in other set.

3. An entity in A is associated with at most one entity in B. An entity in B, however, can be associated with any number (zero or more. of entities in A.

- a. One-to-many
- b. One-to-one
- c. Many-to-many
- d. Many-to-one

Answer: d

Explanation: Here more than one entity in one set is related to one one entity in other set.

4. Data integrity constraints are used to:

- a. Control who is allowed access to the data
- b. Ensure that duplicate records are not entered into the table
- c. Improve the quality of data entered for a specific property
- d. Prevent users from changing the values stored in the table

Answer: c

Explanation: The data entered will be in a particular cell (i.e., table column..

5. Establishing limits on allowable property values, and specifying a set of acceptable, predefined options that can be assigned to a property are examples of:

- a. Attributes
- b. Data integrity constraints
- c. Method constraints
- d. Referential integrity constraints

Answer: b

Explanation: Only particular value satisfying the constraints are entered in the column.

6. Which of the following can be addressed by enforcing a referential integrity constraint?

- a. All phone numbers must include the area code
- b. Certain fields are required (such as the email address, or phone number. before the record is accepted
- c. Information on the customer must be known before anything can be sold to that customer
- d. Then entering an order quantity, the user must input a number and not some text (i.e., 12 rather than 'a dozen'.

Answer: c

Explanation: None.

7. \_\_\_\_\_ is a special type of integrity constraint that relates two relations & maintains consistency across the relations.

- a. Entity Integrity Constraints
- b. Referential Integrity Constraints
- c. Domain Integrity Constraints
- d. Domain Constraints

Answer: b

Explanation: None.

8. Which one of the following uniquely identifies the elements in the relation?

- a. Secondary Key
- b. Primary key
- c. Foreign key
- d. Composite key

Answer: b

Explanation: Primary key checks for not null and uniqueness constraint.

9. Drop Table cannot be used to drop a table referenced by a \_\_\_\_\_ constraint.

- a. Local Key
- b. Primary Key
- c. Composite Key
- d. Foreign Key

Answer: d

Explanation: Foreign key is used when primary key of one relation is used in another relation.

10. \_\_\_\_\_ is preferred method for enforcing data integrity

- a. Constraints
- b. Stored Procedure
- c. Triggers
- d. Cursors

Answer: a

Explanation: Constraints are specified to restrict entries in the relation.

1. Let us consider *phone\_number*, which can take single or several values . Treating *phone\_number* as an \_\_\_\_\_ permits instructors to have several phone numbers (including zero) associated with them.

- a. Entity
- b. Attribute
- c. Relation
- d. Value

Answer: a

Explanation: Treating a phone as an attribute *phone\_number* implies that instructors have precisely one phone number each.

2. The total participation by entities is represented in E-R diagram as

- a. Dashed line
- b. Double line
- c. Double rectangle
- d. Circle

Answer: b

Explanation: It is used to represent the relation between several attributes.

3. Given the basic ER and relational models, which of the following is INCORRECT?

- a. An attribute of an entity can have more than one value
- b. An attribute of an entity can be composite
- c. In a row of a relational table, an attribute can have more than one value
- d. In a row of a relational table, an attribute can have exactly one value or a NULL value

Answer: c

Explanation: It is possible to have several values for a single attribute provide it is a multi-valued attribute.

4. Which of the following indicates the maximum number of entities that can be involved in a relationship?

- a. Minimum cardinality
- b. Maximum cardinality
- c. ERD
- d. Greater Entity Count

Answer: b

Explanation: In SQL (Structured Query Language), the term cardinality refers to the uniqueness of data values contained in a particular column (attribute) of a database table.

5. In E-R diagram generalization is represented by

- a. Ellipse
- b. Dashed ellipse
- c. Rectangle
- d. Triangle

Answer: d

Explanation: Ellipse represents attributes, rectangle represents entity.

6. What is a relationship called when it is maintained between two entities?

- a. Unary
- b. Binary

- c. Ternary
- d. Quaternary

Answer: b

Explanation: Binary word usually represents two attributes.

7. Which of the following is a low level operator?

- a. Insert
- b. Update
- c. Delete
- d. Directory

Answer: d

Explanation: Directory is a low level word on in file system.

8. Key to represent relationship between tables is called

- a. Primary key
- b. Secondary Key
- c. Foreign Key
- d. None of the mentioned

Answer: c

Explanation: Primary key of one relation used as an attribute in another relation is called foreign key.

9. A window into a portion of a database is

- a. Schema
- b. View
- c. Query
- d. Data dictionary

Answer: b

Explanation: View is a logical portion of a database which is needed by some users.

10. A primary key is combined with a foreign key creates

- a. Parent-Child relation ship between the tables that connect them
- b. Many to many relationship between the tables that connect them
- c. Network model between the tables that connect them
- d. None of the mentioned

Answer: a

Explanation: Using the two relationships mother and father provides us a record of a child's mother, even if we are not aware of the father's identity; a null value would be required if the ternary relationship parent is used. Using binary relationship sets is preferable in this case.

#### Set – 8

1. A domain is \_\_\_\_\_ if elements of the domain are considered to be indivisible units.

- a. Atomic
- b. Subatomic
- c. Substructure
- d. Subset

Answer: a

Explanation: A set of names is an example of a nonatomic value.

2. Identify the composite attributes

- a. Salary
- b. Credits
- c. Section\_id
- d. None of the mentioned

Answer: d

Explanation: Composite attributes, such as an attribute address with component attributes street, city, state, and zip have nonatomic domains.

3. Consider the relation given below and find the maximum normal form applicable to them

```
i. R(A, B, C) WITH productions { A --> B }  
ii. R(A, B, C) WITH productions { B --> A }  
iii. R(A, B, C) WITH productions { A --> B, B --> A }  
iv. R(A, B, C) WITH productions { A --> B, B --> A, AB --> C }
```

- a. i, ii and iii are in 3NF and iv is in BCNF
- b. i and ii are in BCNF and iii and iv are in 3NF
- c. All are in 3NF
- d. All are in BCNF

Answer: d

Explanation: One of the more desirable normal forms that we can obtain is Boyce-Codd normal form (BCNF). It eliminates all redundancy that can be discovered based on functional dependencies.

4. Which one is based on multi-valued dependency:

- a. First
- b. Second
- c. Third
- d. Fourth

Answer: d

Explanation: One of the more desirable normal forms that we can obtain is Boyce-Codd normal form (BCNF). It eliminates all redundancy that can be discovered based on functional dependencies.

5. If a relation is in BCNF, then it is also in

- a. 1 NF
- b. 2 NF
- c. 3 NF
- d. All of the mentioned

Answer: d

Explanation: Third normal form (3NF) relaxes this constraint slightly by allowing certain nontrivial functional dependencies whose left side is not a superkey.

6. If every non-key attribute is functionally dependent primary key, then the relation will be in

- a. First normal form
- b. Second normal form
- c. Third form
- d. Fourth normal form

Answer: b

Explanation: Third normal form (3NF) relaxes this constraint slightly by allowing certain nontrivial functional dependencies whose left side is not a superkey.

7. If an attribute of a composite key is dependent on an attribute of the other composite key, a normalization called \_\_\_\_\_ is needed.

- a. DKNF
- b. BCNF
- c. Fourth
- d. Third

Answer: b

Explanation: BCNF eliminates all redundancy that can be discovered based on functional dependencies.

8. The term for information that describes what type of data is available in a database is:

- a. Data dictionary
- b. data repository
- c. Index data
- d. Metadata

Answer: d

Explanation: Meta data is generally data about a data.

9. A data type that creates unique numbers for key columns in Microsoft Access is:

- a. Autonumber
- b. Boolean
- c. Sequential key
- d. Sequential number

Answer: a

Explanation: This can be taken as a primary key.

10. A dependency exist between two columns when

- a. Together they constitute a composite key for the table
- b. Knowing the value in one column determines the value stored in another column
- c. The table is in 3NF
- d. Together they constitute a foreign key

Answer: a

Explanation: Given a set F of functional dependencies on a schema, we can prove that certain other functional dependencies also hold on the schema.

#### Set – 9

1. In the \_\_\_\_\_ normal form, a composite attribute is converted to individual attributes.

- a. First
- b. Second
- c. Third
- d. Fourth

Answer: a

Explanation: The first normal form is used to eliminate the duplicate information.

2. A table on the many side of a one to many or many to many relationship must:
- Be in Second Normal Form (2NF)
  - Be in Third Normal Form (3NF)
  - Have a single attribute key
  - Have a composite key

Answer: d

Explanation: The relation in second normal form is also in first normal form and no partial dependencies on any column in primary key.

3. Tables in second normal form (2NF)
- Eliminate all hidden dependencies
  - Eliminate the possibility of a insertion anomalies
  - Have a composite key
  - Have all non key fields depend on the whole primary key

Answer: a

Explanation: The relation in second normal form is also in first normal form and no partial dependencies on any column in primary key.

4. Which-one of the following statements about normal forms is FALSE?
- BCNF is stricter than 3 NF
  - Lossless, dependency -preserving decomposition into 3 NF is always possible
  - Loss less, dependency - preserving decomposition into BCNF is always possible
  - Any relation with two attributes is BCNF

Answer: c

Explanation: We say that the decomposition is a lossless decomposition if there is no loss of information by replacing  $r$  (R. with two relation schemas  $r_1(R_1)$  and  $r_2(R_2)$ .

5. Functional Dependencies are the types of constraints that are based on\_\_\_\_\_
- Key
  - Key revisited
  - Superset key
  - None of the mentioned

Answer: a

Explanation: Key is the basic element needed for the constraints.

6. Which is a bottom-up approach to database design that design by examining the relationship between attributes:
- Functional dependency
  - Database modeling
  - Normalization
  - Decomposition

Answer: c

Explanation: Normalisation is the process of removing redundancy and unwanted data.

7. Which forms simplifies and ensures that there are minimal data aggregates and repetitive groups:
- 1NF
  - 2NF
  - 3NF



d. All of the mentioned

Answer: c

Explanation: The first normal form is used to eliminate the duplicate information.

8. Which forms has a relation that possesses data about an individual entity:

- a. 2NF
- b. 3NF
- c. 4NF
- d. 5NF

Answer: c

Explanation: A Table is in 4NF if and only if, for every one of its non-trivial multivalued dependencies  $X \twoheadrightarrow Y$ , X is a superkey—that is, X is either a candidate key or a superset thereof.

9. Which forms are based on the concept of functional dependency:

- a. 1NF
- b. 2NF
- c. 3NF
- d. 4NF

Answer: c

Explanation: The table is in 3NF if every non-prime attribute of R is non-transitively dependent (i.e. directly dependent. on every superkey of R.

10. *Empdt1(empcode, name, street, city, state, pincode..*

For any pincode, there is only one city and state. Also, for given street, city and state, there is just one pincode. In normalization terms, empdt1 is a relation in

- a. 1 NF only
- b. 2 NF and hence also in 1 NF
- c. 3NF and hence also in 2NF and 1NF
- d. BCNF and hence also in 3NF, 2NF and 1NF

Answer: b

Explanation: The relation in second normal form is also in first normal form and no partial dependencies on any column in primary key.

#### Set – 10

1. We can use the following three rules to find logically implied functional dependencies. This collection of rules is called

- a. Axioms
- b. Armstrong's axioms
- c. Armstrong
- d. Closure

Answer: b

Explanation: By applying these rules repeatedly, we can find all of  $F^+$ , given F.

2. Which of the following is not Armstrong's Axiom?

- a. Reflexivity rule
- b. Transitivity rule
- c. Pseudotransitivity rule
- d. Augmentation rule

Answer: c

Explanation: It is possible to use Armstrong's axioms to prove that the Pseudotransitivity rule is sound.

3. The relation employee(ID,name,street,Credit,street,city,salary) is decomposed into

```
employee1 (ID, name)
employee2 (name, street, city, salary)
```

This type of decomposition is called

- a. Lossless decomposition
- b. Lossless-join decomposition
- c. All of the mentioned
- d. None of the mentioned

Answer: d

Explanation: Lossy-join decomposition is the decomposition used here .

4. Inst\_dept (ID, name, salary, dept name, building, budget) is decomposed into

```
instructor (ID, name, dept name, salary)
department (dept name, building, budget)
```

This comes under

- a. Lossy-join decomposition
- b. Lossy decomposition
- c. Lossless-join decomposition
- d. Both Lossy and Lossy-join decomposition

Answer: d

Explanation: Lossy-join decomposition is the decomposition used here .

5. There are two functional dependencies with the same set of attributes on the left side of the arrow:

A->BC

A->B

This can be combined as

- a. A->BC
- b. A->B
- c. B->C
- d. None of the mentioned

Answer: a

Explanation: This can be computed as the canonical cover.

6. Consider a relation R(A,B,C,D,E) with the following functional dependencies:

```
ABC -> DE and
D -> AB
```

The number of superkeys of R is:

- a. 2
- b. 7
- c. 10
- d. 12

Answer: c

Explanation: A superkey is a combination of columns that uniquely identifies any row within a relational database management system (RDBMS) table.

7. Suppose we wish to find the ID's of the employees that are managed by people who are managed by the employee with ID 123. Here are two possible queries:

```
I. SELECT ee.empID
   FROM Emps ee, Emps ff
  WHERE ee.mgrID = ff.empID AND ff.mgrID = 123;
II. SELECT empID
   FROM Emps
  WHERE mgrID IN
    (SELECT empID FROM Emps WHERE mgrID = 123);
```

Which, if any, of the two queries above will correctly (in SQL2. get the desired set of employee ID's?

- a. Both I and II
- b. I only
- c. II only
- d. Neither I nor I

Answer: a

Explanation: The query can be satisfied by any of the two options.

8. Suppose relation R(A,B. currently has tuples {(1,2), (1,3), (3,4)} and relation S(B,C) currently has {(2,5), (4,6), (7,8)}. Then the number of tuples in the result of the SQL query:

```
SELECT * FROM R NATURAL OUTER JOIN S; IS:
```

- a. 2
- b. 4
- c. 6
- d. None of the mentioned

Answer: a

Explanation: The SQL NATURAL JOIN is a type of EQUI JOIN and is structured in such a way that, columns with same name of associate tables will appear once only.

9. Suppose now that R(A,B) and S(A,B) are two relations with r and s tuples, respectively (again, not necessarily distinct). If m is the number of (not necessarily distinct. tuples in the result of the SQL query:

$R \text{ intersect } S;$

Then which of the following is the most restrictive, correct condition on the value of m?

- a.  $m = \min(r,s)$
- b.  $0 \leq m \leq r + s$
- c.  $\min(r,s) \leq m \leq \max(r,s)$
- d.  $0 \leq m \leq \min(r,s)$

Answer: d

Explanation: The value of m must lie between the min value of r and s and 0.

10. Suppose relation R(A,B,C,D,E) has the following functional dependencies:

```
A -> B
B -> C
BC -> A
A -> D
E -> A
D -> E
```

Which of the following is not a key?

- a. A
- b. E
- c. B, C
- d. D

Answer: c

Explanation: Here the keys are not formed by B and C.

Set – 11

1. \_\_\_\_\_ can help us detect poor E-R design.

- a. Database Design Process
- b. E-R Design Process
- c. Relational scheme
- d. Functional dependencies

Answer: d

Explanation: For eg., Suppose an instructor entity set had attributes dept name and dept address, and there is a functional dependency dept name -> dept address.

2. If a multivalued dependency holds and is not implied by the corresponding functional dependency, it usually arises from one of the following sources.

- a. A many-to-many relationship set
- b. A multivalued attribute of an entity set
- c. A one-to-many relationship set
- d. Both A many-to-many relationship set and A multivalued attribute of an entity set

Answer: d

Explanation: For a many-to-many relationship set each related entity set has its own schema and there is an additional schema for the relationship set. For a multivalued attribute, a separate schema is created consisting of that attribute and the primary key of the entity set.

3. Which of the following has each related entity set has its own schema and there is an additional schema for the relationship set.

- a. A many-to-many relationship set
- b. A multivalued attribute of an entity set
- c. A one-to-many relationship set
- d. All of the mentioned

Answer: a

Explanation: If a multivalued dependency holds and is not implied by the corresponding functional dependency, it usually arises from this source.

4. In which of the following, a separate schema is created consisting of that attribute and the primary key of the entity set.

- a. A many-to-many relationship set
- b. A multivalued attribute of an entity set
- c. A one-to-many relationship set
- d. All of the mentioned

Answer: b

Explanation: If a multivalued dependency holds and is not implied by the corresponding functional dependency, it usually arises from this source.

5. Suppose the user finds the usage of *room number* and *phone number* in a relational schema there is confusion. This is reduced by

- a. Unique-role assumption
- b. Unique-key assignment
- c. Role integral assignment
- d. None of the mentioned

Answer: a

Explanation: A desirable feature of a database design is the unique-role assumption, which means that each attribute name has a unique meaning in the database.

6. What is the best way to represent the attributes in a large database?

- a. Relational-and
- b. Concatenation
- c. Dot representation
- d. All of the mentioned

Answer: b

Explanation: Example inst sec and student sec.

7. Designers use which of the following to tune the performance of systems to support time-critical operations?

- a. Denormalization
- b. Redundant optimization
- c. Optimization
- d. Realization

Answer: a

Explanation: The process of taking a normalized schema and making it nonnormalized is called denormalization.

8. In the schema (dept name, size. we have relations *total inst 2007*, *total inst 2008*. Which dependency have lead to this relation ?

- a. Dept name, year->size
- b. Year->size
- c. Dept name->size
- d. Size->year

Answer: a

Explanation: The process of taking a normalized schema and making it nonnormalized is called denormalization.

9. Relation *dept year*(*dept name*, *total inst 2007*, *total inst 2008*, *total inst 2009*.. Here the only functional dependencies are from dept name to the other attributes. This relation is in

- a. Fourth NF
- b. BCNF
- c. Third NF
- d. Second NF

Answer: b

Explanation: BCNF has only one normal form.

10. Thus a \_\_\_\_\_ of course data gives the values of all attributes, such as title and department, of all courses at a particular point in time.

- a. Instance
- b. Snapshot
- c. Both Instance and Snapshot
- d. All of the mentioned

Answer: b

Explanation: We use the term snapshot of data to mean the value of the data at a particular point in time.

11. Representations such as the in the dept year relation, with one column for each value of an attribute, are called \_\_\_\_\_ they are widely used in spreadsheets and reports and in data analysis tools.

- a. Cross-tabs
- b. Snapshot
- c. Both Cross-tabs and Snapshot
- d. All of the mentioned

Answer: a

Explanation: SQL includes features to convert data from a normal relational representation to a crosstab.

Set – 12

1. Consider money is transferred from (1) account-A to account-B and (2) account-B to account-A. Which of the following form a transaction?

- a. Only 1
- b. Only 2
- c. Both 1 and 2 individually
- d. Either 1 or 2

Answer: c

Explanation: The term transaction refers to a collection of operations that form a single logical unit of work.

2. A transaction is delimited by statements (or function calls) of the form

- 
- a. Begin transaction and end transaction
  - b. Start transaction and stop transaction
  - c. Get transaction and post transaction
  - d. Read transaction and write transaction

Answer: a

Explanation: The transaction consists of all operations executed between the begin transaction and end transaction.

3. Identify the characteristics of transactions

- a. Atomicity
- b. Durability

- c. Isolation
- d. All of the mentioned

Answer: d

Explanation: Because of the above three properties, transactions are an ideal way of structuring interaction with a database.

4. Which of the following has “all-or-none” property?

- a. Atomicity
- b. Durability
- c. Isolation
- d. All of the mentioned

Answer: a

Explanation: Either all operations of the transaction are reflected properly in the database, or none are.

5. The database system must take special actions to ensure that transactions operate properly without interference from concurrently executing database statements. This property is referred to as

- a. Atomicity
- b. Durability
- c. Isolation
- d. All of the mentioned

Answer: c

Explanation: Even though multiple transactions may execute concurrently, the system guarantees that, for every pair of transactions  $T_i$  and  $T_j$ , it appears to  $T_i$  that either  $T_j$  finished execution before  $T_i$  started or  $T_j$  started execution after  $T_i$  finished.

6. The property of a transaction that persists all the crashes is

- a. Atomicity
- b. Durability
- c. Isolation
- d. All of the mentioned

Answer: b

Explanation: After a transaction completes successfully, the changes it has made to the database persist, even if there are system failures.

7. \_\_\_\_\_ states that only valid data will be written to the database.

- a. Consistency
- b. Atomicity
- c. Durability
- d. Isolation

Answer: a

Explanation: If for some reason, a transaction is executed that violates the database's consistency rules, the entire transaction will be rolled back and the database will be restored to a state consistent with those rules.

8. Transaction processing is associated with everything below except

- a. Producing detail summary or exception reports
- b. Recording a business activity
- c. Confirming an action or triggering a response

d. Maintaining a data

Answer: c

Explanation: Collections of operations that form a single logical unit of work are called transactions.

9. The Oracle RDBMS uses the \_\_\_\_\_ statement to declare a new transaction start and its properties.

- a. BEGIN
- b. SET TRANSACTION
- c. BEGIN TRANSACTION
- d. COMMIT

Answer: b

Explanation: Commit is used to store all the transactions.

10. \_\_\_\_\_ means that the data used during the execution of a transaction cannot be used by a second transaction until the first one is completed.

- a. Consistency
- b. Atomicity
- c. Durability
- d. Isolation

Answer: d

Explanation: Even though multiple transactions may execute concurrently, the system guarantees that, for every pair of transactions  $T_i$  and  $T_j$ , it appears to  $T_i$  that either  $T_j$  finished execution before  $T_i$  started or  $T_j$  started execution after  $T_i$  finished.

Set – 13

1. A transaction may not always complete its execution successfully. Such a transaction is termed

- a. Aborted
- b. Terminated
- c. Closed
- d. All of the mentioned

Answer: a

Explanation: If we are to ensure the atomicity property, an aborted transaction must have no effect on the state of the database.

2. If an transaction is performed in a database and committed, the changes are taken to the previous state of transaction by

- a. Flashback
- b. Rollback
- c. Both Flashback and Rollback
- d. Cannot be done

Answer: d

Explanation: Once committed the changes cannot be rolled back.

3. Each modification done in database transaction are first recorded into the

- a. Harddrive
- b. Log
- c. Disk
- d. Datamart



Answer: b

Explanation: After commit is issued the data are stored in a database and stored in drive.

4. When the transaction finishes the final statement the transaction enters into

- a. Active state
- b. Committed state
- c. Partially committed state
- d. Abort state

Answer: c

Explanation: The commit statement has to be issued to enter into committed state.

5. The name of the transaction file shall be provided by the operator and the file that contains the edited transactions ready for execution shall be called

- a. Batch. Exe
- b. Trans. Exe
- c. Opt. Exe
- d. Edit.Exe

Answer: c

Explanation: Transactions has to be managed by the executable files.

6. Which of the following is an atomic sequence of database actions?

- a. Transaction
- b. Concurrency
- c. Relations
- d. All of the mentioned

Answer: a

Explanation: Transaction is a collection of operations that provides single logical function in database.

7. If the state of the database no longer reflects a real state of the world that the database is supposed to capture, then such a state is called

- a. Consistent state
- b. Parallel state
- c. Atomic state
- d. Inconsistent state

Answer: d

Explanation: If the state of the database no longer reflects a real state of the world that the database is supposed to capture, then such a state is called in a consistent state.

8. \_\_\_\_\_ means that data used during the execution of a transaction cannot be used by a second transaction until the first one is completed.

- a. Serializability
- b. Atomicity
- c. Isolation
- d. Time stamping

Answer: c

Explanation: Isolation means that data used during the execution of a transaction can't be used by a second transaction until the first one is completed.

9. DBMS periodically suspends all processing and synchronizes its files and journals through the use of
- Checkpoint facility
  - Backup facility
  - Recovery manager
  - Database change log

Answer: a

Explanation: DBMS periodically suspends all processing and synchronizes its files and journals through the use of Check point facility.

10. Which of the following is not a state in transaction?

- Active
- Terminated
- Aborted
- Partially committed

Answer: b

Explanation: The transaction states are abort, active, committed, partially committed, Failed.

## **Unit 1**

### **5 Mark Questions**

1. Explain Database, DBMS, and Metadata.
2. Explain different types of Databases.
3. What are the advantages of DBMS?
4. Explain DB System environment.
5. List the limitations/disadvantages of DBMS.
6. What are the problems with File system data management?
7. List and explain the functions and capabilities of DBMS.
8. Explain in detail the components of DB system environment
9. List the database applications.
10. Define instances and schemas of database?
11. Discuss Data Independence?
12. Define (i) Database (ii) DBMS
13. Explain about Database storage structure?
14. Explain the History of Data Base Systems?
15. List the disadvantages of file processing system?
16. Give the levels of data abstraction?
17. Discuss the main characteristics of database approach. How it differ from traditional database.
18. Explain Data Redundancy and Inconsistency.
19. Describe about Data Models and explain E-R model.
20. Define Instance and Domain?
21. What is an Entity? Explain different type of Entities.
22. What is an Attribute? Explain different types of Attributes.
23. Explain Degree of Relationship and its types.
24. What are the basic constructs of ER model?
25. Distinguish between simple and composite attributes.

### **10 Marks Questions**

1. Compare and Contrast file Systems with database systems?

2. Define Data Abstraction and discuss levels of Abstraction?
3. Discuss about different types of Data models?
4. Describe the Structure of DBMS in detail?
5. Discuss additional features of the ER-Models. Discuss about the Concept Design with the ER Model?
6. Write about views and updates on views?
7. Explain different types of database users and write the functions of DBA?
8. Explain about different types of integrity constraints?
9. Discuss about the logical database Design?
10. Distinguish strong entity set with weak entity set? Draw an ER diagram to Apply and illustrate weak entity set?
11. Explain the basic building blocks of Data Model. Write the importance of Data Model.
12. What is the importance of business rules in creating database systems? What is an example of business rule in database design?
13. Which are the different types of data models? How do you evaluate a data model?
14. What is ER Model? What are the components of ER Model? Explain with an example.
15. List the advantages and disadvantages of DBMS. Discuss any five advantages by comparing with file system.

## **Unit 2 & 3**

### **5 mark Questions**

1. Explain the relational database model.
2. What do you understand about ACID properties?
3. List out Codd's Relational Database rules.
4. Explain 1NF, 2NF.
5. Explain 3NF and BCNF
6. What is Primary Key? Explain some desirable Primary Key characteristics.
7. Explain the usage of Composite Primary key with an example.
8. What is Normalization? Explain it in detail.
9. What is Denormalization?
10. Define Functional Dependency.
11. Define the term Data Dictionary and system catalog.
12. What is super key and candidate key? Explain.
13. What is Relational algebra. List out the different relational algebra operators.
14. What are data integrity rules in DBMS?
15. What is the use for normalization? Explain 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> normal forms with examples.
16. What are the types of keys in DBMS? Explain.
17. What is a Relationship in Database? Which are the different types of relationship in database?
18. Explain three – schema architecture in detail.
19. Explain DBMS Specialization.
20. Explain DBMS Aggregation.

## **Unit 2 & 3**

### **10 mark Questions**

1. Illustrate different set operations in Relational algebra with an example?
2. Discuss about Domain Relational calculus in detail?
3. Illustrate redundancy and the problems that it can cause? Define decomposition and how does it address redundancy?

4. Define functional dependencies. How are primary keys related to FD's?
5. Define normalization? Explain 1NF, 2NF, 3NF Normal forms with example?
6. Compare and contrast BCNF with 3NF? Describe properties of decompositions?
7. Illustrate Multivalued dependencies and Fourth normal form with example?
8. Discuss about Join dependencies and Fifth normal form?
9. Explain the different types of keys with example.
10. What is Relational algebra. Explain different relational algebra operations with example.
11. Design an E-R diagram for keeping track of the exploits of your favourite sports team. You should store the matches played, the scores in each match, the players in each match and individual player statistics for each match. Summary statistics should be modeled as derived attributes.
12. Explain how the different update operations deal with constraint violations.
13. Which are the different mapping constraints. Explain briefly.
14. Explain ER to relational mapping briefly.
15. What is Cartesian product? Explain with example.
16. Explain foreign key constraint or referential integrity constraint.

#### **Unit 4**

##### **5 mark Questions**

1. Explain Select Query in SQL.
2. Explain how to create table with syntax in SQL.
3. Explain various Data types used in SQL and PL/SQL.
4. Explain column constraints in SQL.
5. List and explain various DML, DDL commands in SQL.
6. List and explain SQL Logical Operators.
7. Explain Special Operators.
8. What is the use of foreign key constraint with an example?
9. Describe DROP command with options.
10. Explain DCL commands.
11. Explain Order by, Group by and Having Clauses with example.
12. What are Views in SQL? Give an example
13. Explain Aggregate functions with examples.
14. Explain in brief about Subqueries and Correlated queries.
15. What is a Join? Discuss about various joins used in SQL.
16. List and explain SQL Relational Set Operators.
17. What is the use of DISTINCT keyword in SQL?
18. What are the different Clauses used in SQL?
19. Difference between TRUNCATE, DELETE and DROP commands?
20. What is the difference between sub-queries and correlated queries?

#### **Unit 4**

##### **10 mark Questions**

1. Why do we use SQL constraints? Which constraints we can use while creating a database in SQL?
2. What are different JOINS used in SQL? Explain with example.
3. Explain SQL Aggregate functions with example.
4. Explain Create sequence statement in SQL. What is the use of sequence?
5. What is procedural language for SQL server? Explain in details.
6. SQL Correlated sub-queries. Explain with example.

7. How do you create a virtual table in SQL? Explain with example.
8. What is the difference between SQL and MySQL? Explain the different types of SQL Server Languages.
9. Explain advanced select queries with example.
10. Explain SQL Relational Set Operators with example.

#### **Unit 5**

##### **5 mark Questions**

1. What is transaction management and Concurrency Control in DBMS? Explain.
2. What is the need of concurrency Control in DBMS?
3. What is a deadlock situation? Explain.
4. Explain ACID properties.
5. Which are the different states of transaction in a database.
6. How serializability is used for concurrency control?
7. Explain Armstrong's inference rule.

#### **Unit 5**

##### **10 mark Questions**

1. What is Data Recovery? What is the need for recovery of data? Which are the different recovery facilities?
2. Which are the different concurrency control techniques? Explain in detail.
3. Explain Concurrency Control with time stamping methods in detail.
4. Explain Concurrency Control with optimistic methods in detail.
5. Explain database recovery management in detail.

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