TYPICAL QUESTIONS & ANSWERS

PART -I

OBJECTIVE TYPE QUESTIONS

Each Question carries 2 marks.

Choosethe correct or the best alternative in the following:

Q.1   Which of the following relational algebra operations do not require the participating tables to be union-compatible?
   (A) Union   **(B)** Intersection
   (C) Difference   **(D)** Join

   Ans: (D)

Q.2   Which of the following is not a property of transactions?
   (A) Atomicity   **(B)** Concurrency
   (C) Isolation   **(D)** Durability

   Ans: (B)

Q.3   Relational Algebra does not have
   (A) Selection operator.   **(B)** Projection operator.
   (C) Aggregation operators.   **(D)** Division operator.

   Ans: (C)

Q.4   Checkpoints are a part of
   (A) Recovery measures.   **(B)** Security measures.
   (C) Concurrency measures.   **(D)** Authorization measures.

   Ans: (A)

Q.5   Tree structures are used to store data in
   (A) Network model.   **(B)** Relational model.
   (C) Hierarchical model.   **(D)** File based system.

   Ans: (C)

Q.6   The language that requires a user to specify the data to be retrieved without specifying exactly how to get it is
   (A) Procedural DML.   **(B)** Non-Procedural DML.
   (C) Procedural DDL.   **(D)** Non-Procedural DDL.

   Ans: (B)

Q.7   Precedence graphs help to find a

(A) Serializable schedule.   **(B)** Recoverable schedule.
(C) Deadlock free schedule.   **(D)** Cascadeless schedule.

Ans: (A)

Q.8   The rule that a value of a foreign key must appear as a value of some specific table is called a
(A) Referential constraint.   **(B)** Index.
(C) Integrity constraint.   **(D)** Functional dependency.

Ans: (A) The rule that a value of a foreign key must appear as a value of some specific table is called a referential constraint. (Referential integrity constraint is concerned with foreign key)

Q.9   The clause in SQL that specifies that the query result should be sorted in ascending or descending order based on the values of one or more columns is
(A) View   **(B)** Order by
(C) Group by   **(D)** Having

Ans: (B) The clause in SQL that specifies that the query result should be sorted in ascending or descending order based on the values of one or more columns is ORDER BY. (ORDER BY clause is used to arrange the result of the SELECT statement)

Q.10   What is a disjoint less constraint?
(A) It requires that an entity belongs to no more than one level entity set.
(B) The same entity may belong to more than one level.
(C) The database must contain an unmatched foreign key value.
(D) An entity can be joined with another entity in the same level entity set.

Ans: (A) Disjoint less constraint requires that an entity belongs to no more than one level entity set. (Disjoint less constraint means that an entity can be a member of at most one of the subclasses of the specialization.)

Q.11   According to the levels of abstraction, the schema at the intermediate level is called
(A) Logical schema.   **(B)** Physical schema.
(C) Subschema.   **(D)** Super schema.

Ans: According to the levels of abstraction, the schema at the intermediate level is called *conceptual schema*.
(**Note:** All the options given in the question are wrong.)

Q.12   It is an abstraction through which relationships are treated as higher level entities
(A) Generalization.   **(B)** Specialization.
(C) Aggregation.   **(D)** Inheritance.

Ans: (C) It is an abstraction through which relationships are treated as higher level entities Aggregation. (In ER diagram, aggregation is used to represent a relationship as an entity set.)

Q.13   A relation is in _____ if an attribute of a composite key is dependent on an attribute of other composite key.
(A) 2NF   (B) 3NF
(C) BCNF   (D) 1NF

Ans: (B) A relation is in 3 NF if an attribute of a composite key is dependent on an attribute of other composite key. (If an attribute of a composite key is dependent on an attribute of other composite key then the relation is not in BCNF, hence it has to be decomposed.)

Q.14   What is data integrity?
(A) It is the data contained in database that is non redundant.
(B) It is the data contained in database that is accurate and consistent.
(C) It is the data contained in database that is secured.
(D) It is the data contained in database that is shared.

Ans: (B) (Data integrity means that the data must be valid according to the given constraints. Therefore, the data is accurate and consistent.)

Q.15   What are the desirable properties of a decomposition
(A) Partition constraint.   (B) Dependency preservation.
(C) Redundancy.   (D) Security.

Ans: (B) What are the desirable properties of a decomposition – dependency preserving.
(Lossless join and dependency preserving are the two goals of the decomposition.)

Q.16   In an E-R diagram double lines indicate
(A) Total participation.   (B) Multiple participation.
(C) Cardinality N.   (D) None of the above.

Ans: (A)

Q.17   The operation which is not considered a basic operation of relational algebra is
(A) Join.   (B) Selection.
(C) Union.   (D) Cross product.

Ans: (A)

Q.18   Fifth Normal form is concerned with
(A) Functional dependency.   (B) Multivalued dependency.
(C) Join dependency.   (D) Domain-key.

Ans: (C)

Q.19   Block-interleaved distributed parity is RAID level
(A) 2.   (B) 3
(C) 4.   (D) 5.

Ans: (D)

Q.20   Immediate database modification technique uses
    (A) Both undo and redo.   **(B)** Undo but no redo.
    (C) Redo but no undo.   **(D)** Neither undo nor redo.

    Ans: (A)

Q.21   In SQL the statement **select * from R, S** is equivalent to
    (A) Select * from R natural join S.   **(B)** Select * from R cross join S.
    (C) Select * from R union join S.   **(D)** Select * from R inner join S.

    Ans: (B)

Q.22   Which of the following is not a consequence of concurrent operations?
    (A) Lost update problem.   **(B)** Update anomaly.
    (C) Unrepeatable read.   **(D)** Dirty read.

    Ans: (B)

Q.23   As per equivalence rules for query transformation, selection operation distributes over
    (A) Union.   **(B)** Intersection.
    (C) Set difference.   **(D)** All of the above.

    Ans: (D)

Q.24   The metadata is created by the
    (A) DML compiler   **(B)** DML pre-processor
    (C) DDL interpreter   **(D)** Query interpreter

    Ans: (C)

Q.25   When an E-R diagram is mapped to tables, the representation is redundant for
    (A) weak entity sets   **(B)** weak relationship sets
    (C) strong entity sets   **(D)** strong relationship sets

    Ans: (B)

Q.26   When $R \cap S = \phi$, then the cost of computing $R \bowtie S$ is
    (A) the same as $R \times S$ **(B)** greater the $R \times S$
    (C) less than $R \times S$ **(D)** cannot say anything

    Ans: (A)

Q.27   In SQL the word 'natural' can be used with
    (A) inner join   **(B)** full outer join
    (C) right outer join   **(D)** all of the above

    Ans: (A)

Q.28   The default level of consistency in SQL is
- **(A)** repeatable read
- **(B)** read committed
- **(C)** read uncommitted
- **(D)** serializable

Ans: **(D)**

Q.29   If a transaction T has obtained an exclusive lock on item Q, then T can
- **(A)** read Q
- **(B)** write Q
- **(C)** both read and write Q
- **(D)** write Q but not read Q

Ans: (C)

Q.30   Shadow paging has
- **(A)** no redo
- **(B)** no undo
- **(C)** redo but no undo
- **(D)** neither redo nor undo

Ans: (A)

Q.31   If the closure of an attribute set is the entire relation then the attribute set is a
- **(A)** superkey
- **(B)** candidate key
- **(C)** primary key
- **(D)** not a key

Ans: (A)

Q.32   DROP is a _____ statement in SQL.
- **(A)** Query
- **(B)** Embedded SQL
- **(C)** DDL
- **(D)** DCL

Ans: (C)

Q.33   If two relations R and S are joined, then the non matching tuples of both R and S are ignored in
- **(A)** left outer join
- **(B)** right outer join
- **(C)** full outer join
- **(D)** inner join

Ans: (D)

Q.34   The keyword to eliminate duplicate rows from the query result in SQL is
- **(A)** DISTINCT
- **(B)** NO DUPLICATE
- **(C)** UNIQUE
- **(D)** None of the above

`   **Ans: (C)**

Q.35   In 2NF
- **(A)** No functional dependencies (FDs) exist.
- **(B)** No multivalued dependencies (MVDs) exist.
- **(C)** No partial FDs exist.
- **(D)** No partial MVDs exist.

Ans: (C)

Q.36   Which one is correct statement?
Logical data independence provides following without changing application programs:
(i)   Changes in access methods.
(ii)   Adding new entities in database
(iii)   Splitting an existing record into two or more records
(iv)   Changing storage medium
(A) (i) and (ii) **(B)** (iv) only, **(C)** (i) and (iv) **(D)** (ii) and (iii)

Ans: (D)

Q.37   In an E-R, Y is the dominant entity and X is a subordinate entity. Then which of the
following is incorrect :
(A)   Operationally, if Y is deleted, so is X
(B)   existence is dependent on Y.
(C)   Operationally, if X is deleted, so is Y.
(D)   Operationally, if X is deleted, & remains the same.

Ans: (C)

Q.38   Relational Algebra is
(A)   Data Definition Language .
(B)   Meta Language
(C)   Procedural query Language
(D)   None of the above

Ans: (C)

Q.39   Which of the following aggregate functions does not ignore nulls in its results?.
(A) COUNT .   **(B)**   COUNT (*)
(C) MAX   **(D)**   MIN

Ans: (B)

Q.40   R (A,B,C,D) is a relation. Which of the following does not have a lossless join
dependency preserving BCNF decomposition
(A)   A→B, B→CD   **(B)**   A→B, B→C, C→D   .
(C)   AB→C, C→AD   **(D)**   A→BCD

Ans: (D)

Q.41   Consider the join of relation R with a relation S. If R has m tuples and S has n
tuples, then the maximum and minimum size of the join respectively are
(A)   m+n and 0   **(B)**   m+n and |m-n|
(C)   mn and 0   **(D)**   mn and m+n

Ans: (C)

Q.42   Maximum height of a B+ tree of order m with n key values is
     (A) $\text{Log}_m(n)$ **(B)** (m+n)/2
     (C) $\text{Log}_{m/2}(m+n)$ **(D)** None of these

     Ans: (D)

Q.43   Which one is true statement :
     (A) With finer degree of granularity of locking a high degree of concurrency is possible.
     (B) Locking prevents non – serializable schedules.
     (C) Locking cannot take place at field level.
     (D) An exclusive lock on data item X is granted even if a shared lock is already held on X.

     Ans: (A)

Q.44   Which of the following statement on the view concept in SQL is invalid?
     (A) All views are not updateable
     (B) The views may be referenced in an SQL statement whenever tables are referenced.
     (C) The views are instantiated at the time they are referenced and not when they are defined.
     (D) The definition of a view should not have GROUP BY clause in it.

     Ans: (D)

Q.45   Which of the following concurrency control schemes is not based on the serializability property?
     (A) Two – phase locking   **(B)** Graph-based locking
     (C) Time-stamp based locking   **(D)** None of these .

     Ans: (D)

Q.46   Which of the following is a reason to model data?
     (A) Understand each user's perspective of data
     (B) Understand the data itself irrespective of the physical representation
     (C) Understand the use of data across application areas
     (D) All of the above

     Ans: (D)

Q.47   If an entity can belong to only one lower level entity then the constraint is
     (A) disjoint   **(B)** partial
     (C) overlapping   **(D)** single

     Ans: (B)

Q.48   The common column is eliminated in
     (A) theta join   **(B)** outer join

(C) natural join   **(D)** composed join

Ans: (C)

Q.49   In SQL, testing whether a subquery is empty is done using
(A) DISTINCT   **(B)** UNIQUE
(C) NULL   **(D)** EXISTS

Ans: (D)

Q.50   Use of UNIQUE while defining an attribute of a table in SQL means that the attribute values are
(A) distinct values   **(B)** cannot have NULL
(C) both **(A)** & **(B)**   **(D)** same as primary key

Ans: (C)

Q.51   The cost of reading and writing temporary files while evaluating a query can be reduced by
(A) building indices   **(B)** pipelining
(C) join ordering   **(D)** none of the above

Ans: (B)

Q.52   A transaction is in _____ state after the final statement has been executed.
(A) partially committed   **(B)** active
(C) committed   **(D)** none of the above

Ans: (C)

Q.53   In multiple granularity of locks SIX lock is compatible with
(A) IX   **(B)** IS
(C) S   **(D)** SIX

Ans: (B)

Q.54   The statement that is executed automatically by the system as a side effect of the modification of the database is
(A) backup   **(B)** assertion
(C) recovery   **(D)** trigger

Ans: (D)

Q.55   The normal form that is not necessarily dependency preserving is
(A) 2NF   **(B)** 3NF
(C) BCNF   **(D)** 4NF

Ans: (A)

Q.56   A functional dependency of the form $x \rightarrow y$ is trivial if

(A) $y \subseteq x$ **(B)** $y \subset x$

(C) $x \subseteq y$ **(D)** $x \subset y$

Ans: (A)

Q.57 The normalization was first proposed by _____.
(A) Code   **(B)** Codd
(C) Boyce Codd   **(D)** Boyce

Ans: (B)

Q.58 The division operator divides a dividend A of degree m+n by a divisor relation B of degree n and produces a result of degree
(A) m – 1   **(B)** m + 1
(C) m * m   **(D)** m

Ans: (D)

Q.59 Which of the following is not a characteristic of a relational database model?
(A) Table   **(B)** Tree like structure
(C) Complex logical relationship   **(D)** Records

Ans: (B)

Q.60 Assume transaction A holds a shared lock R. If transaction B also requests for a shared lock on R.

(A) It will result in a deadlock situation.
(B) It will immediately be rejected.
(C) It will immediately be granted.
(D) It will be granted as soon as it is released by A .

Ans: (C)

Q.61 In E-R Diagram total participation is represented by

(A) double lines   **(B)** Dashed lines
(C) single line   **(D)** Triangle

Ans: (A)

Q.62 The FD $A \rightarrow B$, $DB \rightarrow C$ implies
(A) $DA \rightarrow C$ **(B)** $A \rightarrow C$
(C) $B \rightarrow A$ **(D)** $DB \rightarrow A$

Ans: (A)

Q.63 The graphical representation of a query is _____.
(A) B-Tree   **(B)** graph
(C) Query Tree   **(D)** directed graph

Ans: (C)

Q.64 Union operator is a :
- **(A)** Unary Operator
- **(B)** Ternary Operator
- **(C)** Binary Operator
- **(D)** Not an operator

Ans: (C)

Q.65 Relations produced from an E-R model will always be
- **(A)** First normal form.
- **(B)** Second normal form.
- **(C)** Third normal form.
- **(D)** Fourth normal form.

Ans: (A)

Q.66 Manager salary details are hidden from the employee .This is
- **(A)** Conceptual level data hiding.
- **(B)** External level data hiding.
- **(C)** Physical level data hiding.
- **(D)** None of these.

Ans: (A)

Q.67 Which of the following is true for network structure?
- **(A)** It is a physical representation of the data.
- **(B)** It allows many to many relationship.
- **(C)** It is conceptually simple.
- **(D)** It will be the dominant database of the future.

Ans: **(A)**

Q.68 Which two files are used during operation of the DBMS?
- **(A)** Query languages and utilities
- **(B)** DML and query language
- **(C)** Data dictionary and transaction log
- **(D)** Data dictionary and query language

Ans: (C)

Q.69 A list consists of last names, first names, addresses and pin codes. If all people in the list have the same last name and same pin code a useful key would be
- **(A)** the pin code
- **(B)** the last name
- **(C)** the compound key first name and last name
- **(D)** Tr from next page

Ans: (C)

Q.70 In b-tree the number of keys in each node is _____ than the number of its children.
- **(A)** one less
- **(B)** same
- **(C)** one more
- **(D)** half

Ans: (A)

Q.71 The drawback of shadow paging technique are
(A) Commit overhead (B) Data fragmentation
(C) Garbage collection (D) All of these

Ans: (D)

Q.72 Which normal form is considered adequate for normal relational database design?
(A) 2NF (B) 5NF
(C) 4NF (D) 3NF

Ans: (D)

Q.73 Which of the following addressing modes permits relocation without any change over in the code?
(A) Indirect addressing (B) Indexed addressing
(C) PC relative addressing (D) Base register addressing

Ans: (B)

Q.74 In a multi-user database, if two users wish to update the same record at the same time, they are prevented from doing so by
(A) jamming (B) password
(C) documentation (D) record lock

Ans: (D)

Q.75 The values of the attribute describes a particular_____
(A) Entity set (B) File
(C) Entity instance (D) Organization

Ans: (C)

Q.76 Which of the following relational algebraic operations is not from set theory?
(A) Union (B) Intersection
(C) Cartesian Product (D) Select

Ans: (D)

Q.77 Which of the following ensures the atomicity of the transaction?
(A) Transaction management component of DBMS
(B) Application Programmer
(C) Concurrency control component of DBMS
(D) Recovery management component of DBMS

Ans: (A)

Q.78 If both the functional dependencies : X→Y and Y→X hold for two attributes X and Y then the relationship between X and Y is

(A) M:N   **(B)** M:1
(C) 1:1   **(D)** 1:M

Ans: (C)

Q.79   What will be the number of columns and rows respectively obtained for the operation, A-B, if A B are Base union compatible and all the rows of a are common to B? Assume A has 4 columns and 10 rows; and B has 4 columns and 15 rows
(A) 4,0   **(B)** 0,0
(C) 4,5   **(D)** 8,5

Ans: (A)

Q.80   For correct behaviour during recovery, undo and redo operation must be
(A) Commutative   **(B)** Associative
(C) idempotent   **(D)** distributive

Ans: (C)

Q.81   Which of the following is not a consequence of non-normalized database?
(A) Update Anomaly   **(B)** Insertion Anomaly
(C) Redundancy   **(D)** Lost update problem

Ans: (D)

Q.82   Which of the following is true for relational calculus?
(A) $\forall x(P(x)) \equiv \neg(\exists x)(\neg P(x))$ **(B)** $\forall x(P(x)) \equiv \neg(\exists x)(P(x))$
(C) $\forall x(P(x)) \equiv (\exists x)(\neg P(x))$ **(D)** $\forall x(P(x)) \equiv (\exists x)(P(x))$

Ans: (A)

Q.83   The part of a database management system which ensures that the data remains in a consistent state is
(A) authorization and integrity manager
(B) buffer manager
(C) transaction manager
(D) file manager

Ans: (C)

Q.84   Relationships among relationships can be represented in an-E-R model using
(A) Aggregation   **(B)** Association
(C) Weak entity sets   **(D)** Weak relationship sets

Ans: (A)

Q.85   In tuple relational calculus P1 AND P2 is equivalent to
(A) $(\neg P1 OR \neg P2)$.   **(B)** $\neg(P1 OR \neg P2)$.
(C) $\neg(\neg P1 OR P2)$.   **(D)** $\neg(\neg P1 OR \neg P2)$.

Ans: (D)

Q.86   If $\alpha \rightarrow \beta$ holds then so does
   (A) $\gamma\alpha \rightarrow \gamma\beta$ **(B)** $\alpha \rightarrow \rightarrow \gamma\beta$
   (C)   both (A) and (B)   **(D)**   None of the above

Ans: (A)

Q.87   Cascading rollback is avoided in all protocol except
   (A)   strict two-phase locking protocol.
   (B)   tree locking protocol
   (C)   two-phase locking protocol
   (D)   validation based protocol.

Ans: (D)

Q. 88   Wait-for graph is used for
   (A)   detecting view serializability.   **(B)**   detecting conflict serializability.
   (C)   deadlock prevention   **(D)**   deadlock detection

Ans: (D)

Q.89   The expression $\sigma_{\theta 1}(E1 \bowtie_{\theta 2} E2)$ is the same as

   (A) $E1 \bowtie_{\theta 1 \wedge \theta 2} E2$ **(B)** $\sigma_{\theta 1} E1 \wedge \sigma_{\theta 2} E2$

   (C) $E1 \bowtie_{\theta 1 \vee \theta 2} E2$ **(D)**   None of the above

Ans: (A)

Q.90   The clause **alter table** in SQL can be used to
   (A)   add an attribute
   (B)   delete an attribute
   (C)   alter the default values of an attribute
   (D)   all of the above

Ans: (D)

Q. 91   The data models defined by ANSI/SPARC architecture are
   (A)   Conceptual, physical and internal
   (B)   Conceptual, view and external
   (C)   Logical, physical and internal
   (D)   Logical, physical and view

Ans: (D)

Q.92   Whenever two independent one-to-many relationships are mixed in the same relation, a
            _____ arises.
   (A)   Functional dependency   **(B)**   Multi-valued dependency
   (C)   Transitive dependency   **(D)**   Partial dependency

Ans:(B)

Q.93   A table can have only one
    (A) Secondary key   **(B)** Alternate key
    (C) Unique key   **(D)** Primary key

Ans: (D)

Q.94   Dependency preservation is not guaranteed in
    (A) BCNF   **(B)** 3NF
    (C) PJNF   **(D)** DKNF

Ans: (A)

Q.95   Which is the best file organization when data is frequently added or deleted from a file?
    (A) Sequential   **(B)** Direct
    (C) Index sequential   **(D)** None of the above

Ans: (B)

Q.96   Which of the following constitutes a basic set of operations for manipulating relational data?
    (A) Predicate calculus   **(B)** Relational calculus
    (C) Relational algebra   **(D)** SQL
Ans: (C)

Q.97   An advantage of views is
    (A) Data security   **(B)** Derived columns
    (C) Hiding of complex queries **(D)** All of the above

Ans: (A)

Q.98   Which of the following is not a recovery technique?
    (A) Deferred update   **(B)** Immediate update
    (C) Two-phase commit   **(D)** Shadow paging

Ans: (C)

Q.99   Isolation of the transactions is ensured by
    (A) Transaction management **(B)** Application programmer
    (C) Concurrency control   **(D)** Recovery management

Ans: (C)

Q.100   _____ operator is used to compare a value to a list of literals values that have been specified.
    (A) Like   **(B)** COMPARE
    (C) BETWEEN   **(D)** IN
Ans: (A)