6. A serializable schedule

A) Has its transactions executed one after another
B) Is equivalent to a serial schedule
C) Can have a dirty read anomaly
D) Cannot be implemented in real life

7. An instance of a relation is

A) A set of attributes
B) A set of tuples at a given time
C) A set of tables
D) An object

8. If F is the set of given FDs, F^+ is

A) A set
B) A relation
C) A functional dependency
D) A cartesian product

9. The following is not a true FD property

A) If $X \to Y$ then $XZ \to YZ$
B) If $X \to YZ$ then $X \to Y$ and $X \to Z$
C) If $XY \to Z$ then $X \to Z$ and $Y \to Z$
D) If $X \to Y$ and $X \to Z$ then $X \to YZ$

10. If $R(XYZ)$ can be decomposed into S(XY) and T(XZ) such that $R = \Pi_{X,Y}(S) \bowtie \Pi_{X,Z}(T)$ t

A) R is in 3rd normal form
B) The decomposition is lossy
C) R is in BCNF
D) The decomposition is lossless

11. In the relational model:

A) Concurrent transactions do not interact
B) Every component is atomic
C) Atomicity must be enforced
D) Tuples in any instance are unique

Mark on the answer sheet provided the option that best answers each of the following questions. Completely fill each bubble using pencil or black ink.

1. A relational schema

   A) has only one relation
   B) may have several relations
   C) is the same as a functional dependency
   D) must have at least 3 relations

2. A transaction

   A) Is related only to bank databases
   B) Can be divided into smaller pieces
   C) Must be concurrent
   D) Must be executed as a unit

3. Isolation means that

   A) Concurrent transactions must not interact
   B) The DBMS must be isolated from other networks
   C) Objects must be isolated from each other
   D) Related objects must not communicate

4. An index can be used to

   A) Make insertions more efficient
   B) Delete more efficiently
   C) Find leaves in trees
   D) Search more efficiently

5. The following are enforced by the user (application)

   A) Isolation and Consistency
   B) Durability and Atomicity
   C) Isolation and Atomicity
   D) Consistency and Durability

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12. If a relation has two sets of independent attributes then

A) independent redundancy will appear
B) multivalued dependency redundancy will appear
C) BCNF redundancy will appear
D) deletion anomaly will appear

13. The following normal form is the hardest to compute

A) BCNF
B) 3NF
C) 2NF

14. The following normal form eliminates all redundancies (including multivalued)

A) BCNF
B) 4NF
C) 2NF
D) None of the above

15. Normalization should take place

A) before designing an E/R diagram
B) after creating the tables in the DBMS
C) before entering the schema in the DBMS
D) after the first query

16. If $\{A, B\}$ is the only key of $R(A, B, C, D)$ then

A) $AB \rightarrow C$ is a BCNF violation
B) $C \rightarrow B$ is a 3NF violation
C) $\{A, B, C\}$ is a superkey
D) $A \rightarrow C$

17. If $X \rightarrow Y$ and $Y \rightarrow Z$ then the following non-trivial fd can be obtained:

A) $X \rightarrow Z - Y$
B) $X \rightarrow Z - X$
C) $X \rightarrow Z$
D) $X \cap Z = \emptyset$

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