	Final Exam	جامعة دمياط Damietta University
Department: Mathematics **Date:** 9/3/2020	**Statistics and Computer Science** **Level**: 4	**Course Title**: Database Systems **Code No.:** 430ر

ANSWER ALL THE FOLLOWING QUESTIONS:

Question 1: Choose the correct answers: (30 Marks)

1. In .... problem one transaction overwrites the changes of another transaction.

   A. dirty read   B. Incorrect Summery   C. lost update   D. fuzzy read

2. Strict two-phase locking protocol permits releasing shared locks at the ....

   A. Beginning of transaction   B. During execution of transaction

   C. End of transaction   D. Never in the life-time of transaction

3. The write timestamp of item X is .... all the timestamps of transactions that have successfully written item X.

   A. the largest of   B. equal to   C. the smallest of   D. different

4. Transaction ....means transaction shouldn't make its updates visible to other transactions until it is committed.

   A. consistency   B. isolation   C. atomicity   D. durability

5. .... refers to the need to maintain secrecy over data.

   A. Availability   B. Confidentiality   C. Integrity   D. Privacy

6. .... is the set of allowable values for one or more attributes.

   A. Null   B. Key   C. Domain   D. Constraint

7. No primary key value can be NULL; this is a ....constraint

   A. referential integrity   B. entity integrity   C. Semantic integrity   D. other

8. If an insertion operation violates one or more constraints the default is to .... the operation.

   A. cascade   B. reject   C. set default   D. other

9. The .... operation is a filter that keeps only those tuples that satisfy a qualifying condition.

   A. Cartesian Product   B. SELECT   C. intersection   D. PROJECT

10. **A transaction that already holds a read lock on item X is allowed under certain conditions to convert the read lock to write lock; this is referred to as…………**

   A. lock shrinking   B. lock downgrade   C. Lock upgrade   D. lock expanding

11. **In ……..Two PL deadlocks are not allowed to happen.**

   A. Basic   B. conservative   C. strict   D. Rigorous

12. **Domain constrains are one of the ………………-based constraints**

   A. inherent model   B. schema   C. application   D. implicit

13. **Referential integrity constraints are Specified between two ……..**

   A. relations   B. tuples   C. attributes   D. databases

14. **……….. is a complete definition or description of the database structure and constraints stored in the catalog.**

   A. DBMS   B. Database Application   C. Meta-data   D. Database

15. **In ……..Two PL a transaction locks all data items it refers to before it begins execution.**

   A. Basic   B. conservative   C. strict   D. Rigorous

16. **………….is a group of objects with the same properties, which are identified by the enterprise as having an independent existence.**

   A. Tuples   B. Attributes   C. An entity type   D. Records

17. **In a table, a column contains duplicate value, if you want to list all different values only, then which SQL clause is used?**

   A. UNIQUE   B.NOT NULL   C. DISTINCT   D. EXIST

18. **The aggregate functions must be written in the ………statement.**

   A. CREATE   B. SELECT   C.UPDATE   D. INSERT

19. **Which statement represents the following query "find all staff names with a salary greater than 5000"**

   A. SELECT name WHERE salary > 5000;

   B. SELECT name FROM staff WHERE salary > 5000;

   C. SELECT salary > 5000 FROM staff;

   D. SELECT * FROM staff;

20. **……….is one of the DBMS functions, which allows shared access of the database.**

   A. concurrency control   B. integrity   C. recovery   D. query processing

21. In the .... on two relations R and S; a tuple is included in the result only if a matching tuple exists in the other relation.

A. Full outer join

B. Right outer join

C. Left outer join

D. Inner join

22. .... problem occurs when a particular transaction consistently waits or restarted and never gets a chance to proceed further.

A. Deadlock   B. Dirty read   C. Starvation   D. Lost update

23. Rigorous two-phase locking protocol permits releasing all locks ....of transaction

A. at the beginning

B. during execution

C. at the end

D. Never in the life-time

24. An advantage of the database management approach is...............

A. data is dependent on programs.

B. data redundancy increases.

C. data is integrated and accessed by multiple programs.   D. none of the above.

25. The schedule S: S: r1(x), w1(x), r2 (x), w2(x), A1, C2 causes .... problem

A. uncommitted read

B. lost update

C. Incorrect Summery

D. dirty read

26. In the access matrix model, the rows of a matrix may represent........

A. read operation   B. record   C. users   D. privilege

27. .... Operation(s) is (are) impossible unless both tables involved have the same schemas

A. Union   B. intersection   C. Cartesian Product   D. A &B

28. .... system restores the database to a previous consistent state following a hardware or software failure.

A. An Integrity   B. A security   C. A concurrency control   D. A recovery

29. ....represents a value for an attribute that is currently unknown or is not applicable for this tuple.

A. Domain   B. Null   C. Key   D. Single value

30. .... is called as a virtual table in SQL

A. Inner join   B. union   C. view   D. relation

Question 2: State true or false and correct the wrong statement   (20 Marks)

1. If the degree of R ,S is 5, 6, then the degree of R ∪ S is 11

2. Being serializable implies that the schedule is a correct schedule.

3. Integrity constraints are specified and enforced only at the run time

4. Isolation means transaction is an atomic unit of processing.

5. In RBAC: Roles May exist before users do.

6. $\sigma_{<cond1>}(\sigma_{<cond2>}) = \sigma_{<cond2>}_{<cond1>}$

7. Consistency means transaction shouldn't make its updates visible to other transactions until it is committed.

8. The relational algebra expression $\pi L(R)$ has cardinality equal to the cardinality of L

9. A schedule S is serializable if it contains transactions executed one by one.

10. Properties of transactions (ACID) refer to Automated, Correct, Integrated, Defined.

Question 3 Complete the Following Sentences   (30 Marks)

1. The graph which used to detect the dead lock is called...........

2. The four Database security pillars are ......, ..., ..., ...

3. .... occurs when a particular transaction consistently waits or restarted and never gets a chance to proceed further.

4. We use the naturel join only when the two relations have ....

5. The schedule S: r1(x), r2(x), w1 (x), w2(x), c1, C2 causes .... problem

6. The same data may be stored in multiple files; this causes the data ....problem.

7. In ......security model, data and users are classified based on security classes.

8. Two modes of locking a data item, are termed as 'shared' and ....

9. If every transaction in a schedule follows the two-phase locking protocol, the schedule is guaranteed to be ....

10. In ....Two PL a transaction does not release any of its locks (exclusive or shared) until after it commits or aborts.

11. Primary keys must satisfy two main properties which are .... and ....

Question 4   (10 Marks)

Suppose that you create Two Relations R and S in the database. Suppose that user A1 wants to allow user A3 to retrieve information from either of the two tables and also to be able to propagate the SELECT privilege to other accounts.

   A. Write the statements that *A1 may issue.*

   B. Write the statements that *A3 may issue to grant the SELECT privilege on the S relation to A4*