End Term Examination   CS310 - DBMS   Date : 06/05/2021
Time : 2.00 PM to 3.30 PM.   Duration : 1hr 30 Mins   Marks :
50
Guidelines :

• *Use ONLY Paper and pen for writing all the Answers. A Scanned copy of the Final handwritten answer sheets as ZIP file need to be uploaded to individual Student Git Hub account address. If there is any change in the GitHub details, share the link.*
•*Each answer written page should have Roll number and Name.*
•*Group submissions are not allowed.*
•*Any GitHub Submission after 3.40 PM will not be considered.*
•*All the Questions to be answered in the same Order.*
•*Wrong answers will carry 25% negative marks of that Question.*

Note: Institute examination policy rules are applicable to Online Examination as well. Students are refrained from practices which are against the Examination policy of the Institute. eg: Coping from Friends answer sheets, Cut and Paste from online material, Coping from any other sources etc..

1. Consider the following scenario :   4 Marks

XYZ company is storing their employees tuples in a heap file, with a clustered index on the empname field. Alternatively, they also choose to store it with an index on the empid field, or indexes on both fields (empname and empid), or to store it as a file sorted by the an attribute empid.

- Is it possible to do all these operations in DBMS ?
- if yes, explain why is it possible ?
- If no, explain why is it not possible?

2. Fill in the Blanks: 5 Marks

- DDL is important in_____ in DBMS because it is used to describe_____ and _____.
- DML is used to_____ and_____ data; it is not important for_____.

3. DBMS interleave the actions of different transactions instead of executing transactions one after the other. TRUE or FALSE. Justify your answers   5 Marks

4. XYZ is a Banking system DBMS that supports different types of Transactions and database operations. Both DBMS and Users have to ensure consistency for a proper working of the database.
   a. Explain what user has to guarantee with respect to a transaction and database consistency?
   b. Explain what DBMS should guarantee with respect to concurrent execution of several transactions and database consistency?   6 Marks

5. XYZ is developing a DBMS application that has many relations. XYZ has created an instance of the relations.
   Is it possible to determine a key of a relation given only one instance of the relation? Justify your statement.   4 Marks

6. The following is the result of the SQL Query which retrieves the database Instance as follows.   6 Marks

studentID	studentName	Email	Age
1000	Jaya	Jaya@xyz.com	20
1005	Krishna	Krishna@pqr.com	22
1030	John	Null	23
1020	John	Jh@xyz.com	22

- Create a Clustered index on studentName column and rewrite the SQL query so that only the email column is included in the answer.
- If the clause WHERE S.Age >= 21 is added to the original query, what is the set of tuples in the answer?

7. Consider the following schema: 8 Marks

- Suppliers(sid: integer, sname: string, address: string)
- Parts(pid: integer, pname: string, color: string)
- Catalog(sid: integer, pid: integer, cost: real)

Find the pids of parts supplied by at least two different suppliers. Write the query in relational algebra and **SQL** Query.

8. Π sname (π sid ((σ color='red' Parts) ⋈ (σ cost < 100 Catalog) ⋈ Suppliers))

   Find out the final result or output of the above query?
   Note: Refer to Q.7 schemas for details. **6 Marks.**

   9 Consider the following Schemas: 6 Marks

- Emp(eid: integer, ename: string, age: integer, salary: real)
- Works(eid: integer, did: integer, pct time: integer)
- Dept(did: integer, budget: real, managerid: integer)

   Write a view query on Emp schema that could be automatically updated by updating Emp.