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semester : 5 subject : DBMS
seat No: CS5A021
pg No : 1/5 of Q3 sign : K.G.Kalani.

Q) i) In the concurrency control, the multiple transactions can be executed simultaneously.
ii) It may affect the transaction result. It is highly important to maintain the order of execution of those transactions.
iii) These conflicts mostly occurs with multi-user system.
iv) Therefore concurrency control is the most important element for proper functioning of DBMS where two or more database transactions are executed simultaneously.
v) Various concurrency control protocols are.
a) Two phase locking protocol
The (2PL) synchronizes reads and writes by explicity detecting and preventing conflicts between concurrent operates.
b) Before reading data item (x) a transaction must "own" a read lock x. Before writing into X, transaction must "own" a write lock on X.

The ownership of lock is governed by two rules.

a) Different transaction cannot simultaneously own conflicting locks (i.e WR)

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b) Once a transaction surrenders ownerships of a lock, it may never obtain additional locks.

i) For 'RW' synchronization two locks conflict if both are locks on same data item one is a read lock and other is a write lock.

ii) For 'WW' synchronization two locks conflict if both locks on same data item and both are write locks.

The second lock ownership rule causes every transaction to obtain locks in two phase manner.

Growing phase :-
Transaction may obtain in number of new locks but may not release any lock.

Shrinking phase :-
Transaction may release locks but cannot obtain any new lock

Validation Based Protocol :-
They are known as optimistic concurrency control technique is a method to avoid concurrency in transaction. The validation phase protocol is performed in three phases.

i. Read phase.
ii) Validation phase.
iii) Write phase.

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a) Read phase :-
In Read phase, the data values from database can be read by transaction but write operation or updates are only applied to 'local' data copies, not actual database.

b) Validation phase
In this phase the data is checked to ensure that there is no violation of serializability while applying transaction updates to database.

c) Write phase.
In write phase, the updates are applied to database if validation is successful else the updates are not applied and transaction is rolled back.

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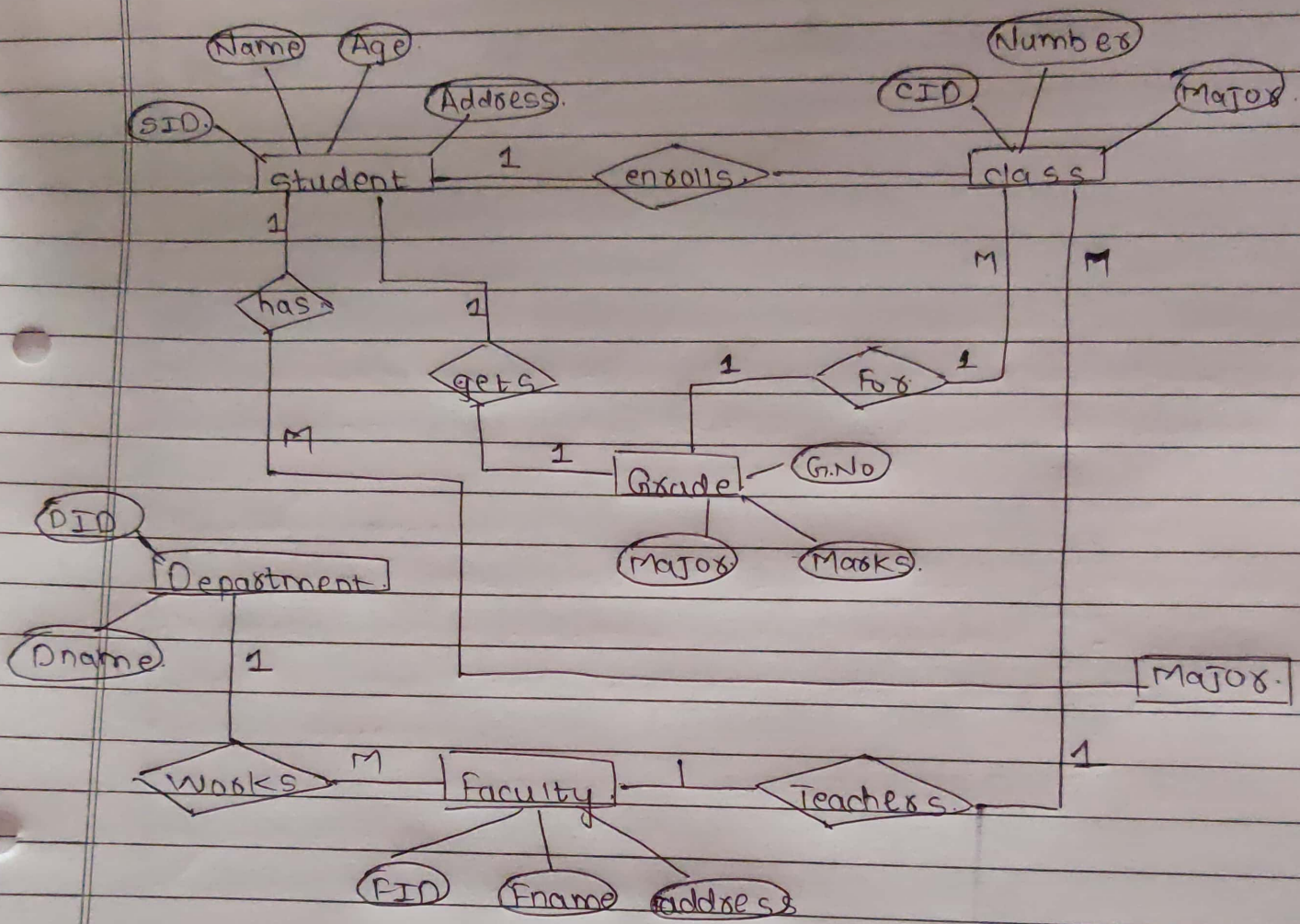
A)



Relational Schema.

Student (SID , Name , Age , Address , Dept-id)
Faculty (FID , Fname , Faddress , Dept-id)
class (CID , Number , Major)
Stud class (SID , Number)
take class (FID , Number)
Department (DID , Dname)
Grade (SID , Number , Grade)

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B) i) SELECT * FROM employee
WHERE to_char(date_of_join, 'mm') = '10';

ii) UPDATE employee
SET city = "Mumbai"
WHERE employeename = "Anjali";

iii) SELECT P.employee.name
FROM employee P, employee R, employee M.
WHERE P.employee.name = M.employee.name and
M.manager.name = R.employee name and
P.street = R.street and P.city = R.city.;

iv) SELECT employeename FROM works
WHERE salary > (SELECT Avg(salary) From works);

v) UPDATE ~~WORKS~~ works.
SET salary = 1.15 * salary.
WHERE company_name = "ABC coopsation");

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