

Name : Nazmul Hasan Oyon

ID: 20101528

Section : 05

1.

**Domain :** Each attribute has sets of valid values which is called domain.

**Attribute :** Column headers are called attributes.

**n-tuple :** If each rows has  $n$  values then that particular rows are called  $n$  tuples.

**Relation schema :** Schema is a description of a relation. Schema is denoted by  $R(A_1, A_2, \dots, A_n)$

**Relation state :** Relation state is a subset of the cartesian product of the domain of its attributes.

2.

Super key	Key
(i) It may contain unnecessary attributes.	(i) It contain only <del>the</del> attributes that are needed to find unique rows.
(ii) Superkey is not a subset of key.	(ii) Key is a subset of super key.

3.

Entity integrity: In a table primary key is used to find each record in a table. This is defined as entity integrity. In the entity integrity constraint states there is no primary key value can be null. This is used to identify individual tuples in a relation. If there are null values in primary key attributes we can't identify each tuple or record. And also if there are multiple primary key exist then also value can't be null.

Referential integrity: It requires a foreign key must have a matching primary key. Foreign key values must come from references table attribute value. A foreign key value can be null when it is not a primary key. And if it is a primary key then it can't be null.

Entity and referential integrity both are important because one is used for identifying each record and one is used for linking multiples tables in a database.

4.

Foreign key: Any attribute that is referencing the primary key of another table is called foreign key. It is a column or group of column that provides a link between two tables.

5.

- (a) No violation
- (b) Violation of referential integrity constraint.  
Here, dnum attribute is a foreign key and also a primary key of department and DEPT LOCATIONS. Here, DNUM=2 doesn't exist in the department and dept-locations table. So, it's violating referential integrity constraints.
- (c) Violation of key constraint. Here is D-NUMBER is a primary key attribute and it should be unique but D-NUMBER=4 already exist in the table.
- (d) Violation of referential integrity and entity integrity. Here ESSN is the foreign key of works-ON table and also a primary key of EMPLOYEE table. ESSN='677678989' doesn't exist in EMPLOYEE table. Again, PNO

is a primary key so it ~~can't be~~ can't be null.

- (e) no violation
- (f) no violation

(g) Referential integrity constraint violated.

as SSN attribute is linked with WORKS-ON and DEPENDENT table.

SET NULL won't work because of the primary key. CASCADE won't work for department table. So, here RESTRICT option will work.

(h) Referential integrity constraint violated.  
Here, 'CASCADE' option will work because of WORKS-ON table.

- QUESTION 010 (D)
- (i) no violation constraint
  - (ii) Referential integrity constraint violated here. Because the mentioned SSN don't exist so, it will restrict the update operation
  - (iii) no violation constraint