Relational Database design → developed by Dr E.F. Code.

if question of Relational data, then following things to write in exam.

Roll No.	Name	Branch	Phone

→ Definition of Relation
→ Basic concept of relation
Attribute
Tuple
Domain
Degree
Cardinality

Relational Key:- The basic purpose of key is to remove the redundancy (duplication) in the relation. In other words it helps to uniquely identify the record in a relation.

In order to remove the redundacy within a relation simply list all the attribute and consider only those attributes that have basic two properties :-

1) Uniqueness
2) Irreducible

UNIQUENESS:- There is no duplicacy of row in a relation.

IRREDUCIBLE:- The attribute which are used to form the key should not be further broken into sub parts.

Types of Keys.

1) Candidate Key
2) Super Key
3) Primary Key
4) Alternate Key
5) Foreign Key
6) Composite Key.

CANDIDATE KEY

:- A candidate key is set of one or more attribute whose combined values are unique among all the records and key cannot be further reduced.

- Candidate key is not allowed to be Null (empty).
- There can be number of candidate key in the table.
- It must satisfy properties of Keys i.e., uniqueness, irreducible.

S.No	RollNo (Key)	Name	Branch	Ph.no (Key)
1	101	Akash	BBA	9814212345
2	102	Aman	BBA	9814312345
3	103	Amit	BBA	9814212345
4	104	Akash	BBA	9914413268

Attribute
Roll No. - unique so Cand. Key.
Name - not C.K.
Branch - not C.K
Ph. no. - not C.K.
S.No - C.K.

if 104 is missing then it will not candidate Key.

SUPER KEY

:- It is a combination of attributes that can uniquely identify the database record.

- A table can have many super keys.
- Candidate keys are the special subset of Superkey.
- If we add another attribute to the candidate key and it satisfy the property of uniqueness it is known as super key.
- It may or may not satisfy the property of irreducible.

- Every candidate key is a super key.
  Roll No —— Super key
  (Roll No, Name) —— S.K.
  (Roll no, ph.no., name) —— S.K.

PRIMARY KEY

:- Primary keys are used to uniquely identify record in a relation.

- One relation can have more than one column with unique value, so select only one as primary.
- No record can have null value.
- Only one primary key allow for any relation.
  If two candidate key then select one as primary and another one's alternate.

ALTERNATIVE KEY.

:- When there is more than one candidate key in the relation then one is selected as primary and another is known as Alternative key.

- Eg:- Roll No — CK → this is Primary key.
  Name — x
  Branch — x
  Ph. No — x
  S. No —— C.K → this is alternative key.

COMPOSITE KEY.

:- It is a key that consists of two or more attributes that uniquely identify row or record of relation.

- It cannot be irreducible. (Roll no., Name) – Composite key
- It cannot contain null value. (Roll No) – no composite key.

FOREIGN KEY

:- A foreign key is a referential constraint between two table. A foreign key in one table point to a primary key in another table

- It is used to create a relationship b/w two or more tables.
- The data entered in foreign key column must exist in primary key of referenced table (parent table).
- The value in a foreign key can be null.

P-ID	Name	City
1	Amar	FZD
2	Amit	MODA
3	Akash	FZR

P.K

Order-ID	orderNo.	P-ID
101	12345	1
102	12456	2
103	12347	2
104	12345	NULL

P.K

F.K

Person
Referenced Table or Parent Table

Order
Referencing-table or child table

FUNDAMENTALS OF NULL

- In the relational model null means nothing.
- A null value is not the like zero.

- Null value is not the empty string value.

DATA INTEGRITY (Integrity constraint)

It refers to the consistency and accuracy of the data stored in the data base.

1) Domain Integrity
2) Entity Integrity
3) Referential Integrity
4) User Define Integrity.

Domain Integrity

- It specify set of data values that is valid for column or a attribute.
- It check the domain integrity by applying data type range of possible value to the attribute.

Entity Integrity

- It is applied on the row of a relation to ensure the accuracy and consistency of a data base.
- Not to record of a relation have duplicate value in the specified column of a relation.
- The primary key column cannot contain null value.
- Entity Integrity can be ensured by setting the attribute as a primary key.

Referential Integrity

- A relationship b/w primary key in reference table and foreign key in a referencing table is always maintained.

- This referential integrity ensures with the help of foreign key.

User Difine Integrity

- The rools which are defined by the users to ensure the integrity other than domain, entity and referential integrity.

Difference between DBMS and Relational DBMS

DBMS	RDBMS.
• It is Data Base Management system	It is the relational data Base management system.
• It can store data in any format. Eg - In form of graph, table, tree, etc.	It always store data in the format of table.
• It is for single user only.	It is for the multiple user.
• It is for smaller organisation with small amount of data.	It is used for large organisation with large amount of data.
• It does not support Client server architecture	It supports the client server architecture
• It requires low cost hard-ware and software.	High cost hardware and software.
• Eg:- MS Access, DBase, etc	Eg:- ORACLE, SQL server, etc.