

1. Which of the following is the trivial functional dependency ? (GATE 2015)

- A. $\{P,R\} \rightarrow \{S,T\}$ B. $\{P,R\} \rightarrow \{R,T\}$ C. $\{P,S\} \rightarrow \{S\}$
 D. $\{P,S,U\} \rightarrow \{Q\}$

2. Given the following relation instance. (GATE 2000)

X	Y	Z
1	4	2
1	5	3
1	6	3
3	2	2

Which of the following functional dependencies are satisfied by the instance? (GATE CS 2000)

- A. $XY \rightarrow Z$ and $Z \rightarrow Y$ B. $YZ \rightarrow X$ and $Y \rightarrow Z$
 C. $YZ \rightarrow X$ and $X \rightarrow Z$ D. $XZ \rightarrow Y$ and $Y \rightarrow X$

3. Let x, y, z, a, b, c be the attributes of an entity set E. If $\{x\}$, $\{x,y\}$, $\{a,b\}$, $\{a,b,c\}$, $\{x,y,z\}$ are superkeys then which of the following are the candidate keys? (ISRO CS 2014)

- A. $\{x,y\}$ and $\{a,b\}$ B. $\{x\}$ and $\{a,b\}$ C. $\{x,y,z\}$ and $\{a,b,c\}$
 D. $\{z\}$ and $\{c\}$

4. Write Valid and Invalid FDs

UserID	U_email	Fname	Lname	City	State	Zip
MA12	Mani@ymail.com	Manish	Jain	Bilaspur	Chatisgarh	45899
PO45	Pooja.g@gmail.com	Pooja	Magg	Kacch	Gujrat	83221
LA33	Lavle98@jj.com	Lavleen	Dhalla	Raipur	Chatisgarh	85357
CH99	Cheki9j@ih.com	Chimal	Bedi	Trichy	Tamil nadu	63201
DA74	Danu58@g.com	Dany	James	Trichy	Tamil nadu	64501

5. Check the functional dependencies of a relation are satisfied or not?

Consider a relation R (A, B, C, D) with the following instance;

A	B	C	D
1	1	2	3
1	2	2	3
1	3	2	3
2	4	5	6
5	6	7	8

Which of the following functional dependencies are satisfied by this relation? How?

- (a) $A \rightarrow B$ (b) $A \rightarrow CD$ (c) $AB \rightarrow CD$ (d) $C \rightarrow D$ (e) $B \rightarrow A$ (f) $BD \rightarrow AC$
 (g) $AD \rightarrow BC$ (h) $D \rightarrow B$ (i) $D \rightarrow C$ (j) $C \rightarrow A$

6. Write any 5 Valid and Invalid functional dependencies of a relation

Regno	Name	DOB	Phone	Gender	CID	CName	Ins_ID	Ins_Name	Ins_Office
14M01	Kumar	12-Jan-1996	12345	M	C1	DBMS	I1	Kesav	G123
14M05	Mary	10-Jun-1995	12367	F	C1	DBMS	I1	Kesav	G123
14M07	Ram	10-May-1996	12898	M	C1	DBMS	I2	Ragav	G127
14M01	Kumar	12-Jan-1996	12345	M	C3	DS	I5	Mani	G125
14B01	Revathi	10-Dec-1995	23456	F	C3	DS	I5	Mani	G125
14M09	Steve	23-Oct-1995	34567	M	C4	OS	I5	Mani	G125
14B04	Sita	20-Jul-1996	23456	F	C4	OS	I5	Mani	G125
14B03	Ramya	20-Jul-1996	23456	F	C4	OS	I5	Mani	G125