Branch : CSE & IT	Batch : Vijay (Hinglish)

Database Management System

FD's & Normalization

Practice Set 01

[MSQ]
1. According to RDBMS rules, choose the correct statement from the following.
   (a) A relation in RDBMS can have multiple attributes
   (b) A relation in RDBMS is a set of rows and columns
   (c) A tuple in a relation can have multiple values for an attribute.
   (d) All of the above

[NAT]
2. Consider the student relation shown below with schema stud (Sname, S age, S mail, S marks),
   Stud

Sname	Sage	Smail	Smarks
Rohit	28	R@pw.live	68
Kanika	25	K@pw.live	75
Pankaj	25	K@pw.live	75
Rohit	28	R@pw.live	88
Anjali	26	A@pw.live	75

   For the above given instance how many 2-set of attributes can determine a row uniquely?

[MSQ]
3. Consider a relation schema R(A, B, C, D, E, F, H) with the given Functional dependency set:
   $\{A \rightarrow BC, C \rightarrow AD, DE \rightarrow F, C \rightarrow F\}$
   The attribute closure that contains all the attributes of the relation R is?
   (a) AE^+
   (b) CE^+
   (c) AEH^+
   (d) All of the above

[NAT]
4. Consider the below relation schema Stud (Rid, name, course, mail, phone) with FD set as:
   $Rid \rightarrow \{Rid\}$
   $Rid \rightarrow \{name, mail\}$
   $course \rightarrow \{course, phone\}$
   $phone \rightarrow \{phone\}$
   $mail \rightarrow \{Rid, course\}$
   $name \rightarrow \{phone, mail, course\}$
   The number of non-trivial FD's in the given FD set is/are?

[MCQ]
5. Consider the following set of FD's:
   $\{V \rightarrow W, W \rightarrow XZ, X \rightarrow YZ\}$ for relation R(V, W, X, Y, Z)
   Then the attribute closure of YZ^+ contains how many elements?
   (a) 0
   (b) 1
   (c) 2
   (d) 3

[MCQ]
6. For the given FD set: $\{P \rightarrow QT, Q \rightarrow SU, V \rightarrow U\}$ of a relation R (P, Q, T, S, U, V). Find the set of attributes that is Super key but not a Candidate key?
   (a) PTQ
   (b) PV
   (c) PQV
   (d) QV

[MCQ]
7. In a schema with attribute X, Y, Z, W, V, the following set of functional dependencies are given:
   $\{Y \rightarrow X, Y \rightarrow Z, ZW \rightarrow V, X \rightarrow W, V \rightarrow X\}$.
   Which of the following FD is not implied by the above set?
   (a) $YX \rightarrow ZW$
   (b) $XV \rightarrow YZ$
   (c) $ZW \rightarrow V$
   (d) $XV \rightarrow XW$

[MSQ]
8. Choose the correct statement from the following.
   (a) The cardinality is defined as the number of attributes in a relation.
   (b) Degree of the relation is the number of tuples in the relation.
   (c) Relation instance is the set of tuples of a relation at a particular instance of time.
   (d) All of the above

[MSQ]
9. Choose the correct statement from the following:
   (a) There can be many primary keys for a relation.
   (b) There can be many alternate keys for a relation.
   (c) All the candidate keys are also super keys.
   (d) All the super keys are also the candidate keys.

[NAT]

10. Consider the below instance of relation:

Employee:

Emp_rating	Emp_name	Emp_mail	Emp_sal
1	Rohit	p@pw	40000
2	Kanika	c@pw	60000
1	Rohit	Null	50000
3	Pankaj	g@pw	60000

The maximum possible number of alternate keys for the above relational instance is/are _____.

[MCQ]

11. Consider the set of functional dependencies for a relation R(D, N, C, S)

{D→N, D→C, D→S, C→S}

Then choose the correct statement regarding the above set.

(a) {D} is the superkey for the relation.
(b) {DN} is the candidate key for the relation.
(c) {DC} is the candidate key for the relation.
(d) {CN} is the superkey for the relation.

[NAT]

12. Consider the given FD set for relation

R (X, Y, Z, W, U, V)

{X → Y, YZ → W, U → Z, W → X}

Then the number of prime attributes for the relation are?

[MCQ]

13. Choose the incorrect statement from the following

(a) All super keys cannot be primary key.
(b) We choose the minimal candidate key to be a primary key.
(c) The number of super keys are equal to the number of primary keys for a relation.
(d) None of the above.

[NAT]

14. Suppose a relation R has 9 attributes, then the maximum possible number of candidate keys are?

[MSQ]

15. For all given set of FD, find the primary key from the options below, for relation R (A, B, C, D, E, F)

{A → BC, C → DE, C → F, B → C}

(a) AC could be the primary key.
(b) There are two candidate keys AC and AB.
(c) BC is the primary key.
(d) No primary key exists for the relation.

[MCQ]

16. Consider a relation R (A B C D E F), on this relation how many maximum number of candidate keys are possible?

(a) 8   (b) 12
(c) 16   (d) 20

[MCQ]

17. Consider the relation R (P, Q, R, S, T) and the set of function dependencies F = {P →Q, QR →T, TS→P}. Which of the following is not the candidate key of R?

(a) RST   (b) PRS
(c) QRS   (d) PQR

[NAT]

18. Assume a relation R (P, Q, R, S, T) with the set of functional dependencies {P→Q, Q→R, R→Q and Q→T}. how many candidate keys are possible in R?

[MCQ]

19. Consider the following statements:

S_1: A key in DBMS is an attribute (or) a set of attributes that help to uniquely identify a tuple (or row) in a relation (or table).

S_2: There should be only one candidate key in relation, which is chosen as the primary key.

(a) Only S_1 is true.
(b) Only S_2 is true.
(c) Both S_1 and S_2 are true.
(d) Neither S_1 nor S_2 is true.

[MSQ]

20. Choose the correct statements from the following:

(a) Then minimal set of attributes that can uniquely identify tuple is known as a candidate key.
(b) A super key is a group of single or multiple keys that identifies rows in a table. It supports NULL values.
(c) Primary key is not a unique key.
(d) None of the above.

[MSQ]

21. Consider a schema with attributes A, B, C, D & E following set of functional dependencies are given,

A→B
A→C
CD→E
B→D
E→A

Which of the following functional dependencies is implied by the above set?

(a) CD→AC   (b) BC→CD
(c) AC→BC   (d) BD→CD

[MCQ]

22. Assume the relation R that has eight attributes ABCDEFGH. Let A = {CH→G, A→BC, B→CFH, E→A, F→EG} is a set of functional dependencies (FD). How many candidates key does the relation R have? _____.

(a) 2   (b) 3

(c) 4   (d) 5

[MCQ]

23. Assume the relation schema R(P, Q, R, S, T, U, V, W, X, Y) and the set of functional dependencies on R: F = {PQ→R, Q→UV, PT→WX, W→Y, X→Z}. Which of the following can be candidate key for R?

(a) PQU   (b) PQT

(b) PQTR   (d) PQTWX

[MCQ]

24. Consider the following statements:

S₁: Primary key has no duplicate values it has only unique values.

S₂: Primary key are not necessary to be a single column more than one column can also be a primary key for table.

(a) Only S1 is true.

(b) Only S2 is true.

(c) Both S1 & S2 are true.

(d) Neither S1 nor S2 are true.

[MSQ]

25. Choose the correct statements about candidate key.

(a) Candidate key is a super key with maximum attributes.

(b) It must contain unique values.

(c) A table can have multiple CK's but only one primary key.

(d) It is a super key with no repeated data which is called a candidate key.

[MCQ]

26. Consider the following two sets of functional dependencies

X = {P→Q, Q→R, R→P, P→R, R→Q, Q→P}

Y = {P→Q, Q→R, R→P}

Which of the following is true?

(a) X ⊂ Y   (b) Y ⊂ X

(c) X ≡ Y   (c) X ≠ Y

[NAT]

27. Consider a relation with schema R(P, Q, R, S, T) and FD set (PQ→R, R→S, S→P). How many super keys in relation R contains?_____.

[NAT]

28. Consider a relation R(P, Q, R, S, T) with the set of functional dependencies {P→QR, RS→T, Q→S, and T→P}. How many super keys are possible in R? _____.

[MCQ]

29. Consider the relation schema R(P, Q, R, S, T, U, V, W, X, Y) and the set of functional dependencies on R are: F = {PQ→R, Q→TU, PS→VW, V→X, W→Y}. Which of the following can be the candidate key for R?

(a) PQT   (b) PQS

(c) PQSR   (d) PQSVW

[NAT]

30. Let a relation R have attributes {P, Q, R, S, T} and "PQR" is the candidate key, then how many super keys are possible _____?

Answer Key

1. (a, b)
2. (1)
3. (c)
4. (3)
5. (c)
6. (c)
7. (b)
8. (c)
9. (b, c)
10. (3)

11. (a)
12. (5)
13. (c)
14. (126)
15. (a, b)
16. (d)
17. (d)
18 (1)
19. (a)
20. (a, b)

21. (a, b, c)
22. (c)
23. (b)
24. (c)
25. (b, c, d)
26. (c)
27. (7)
28. (27)
29. (b)
30. (4)