# Database Management System Questions

By Group 3

## Questions 1-2

**Statement for Questions 1 and 2:**  
Relation R has eight attributes ABCDEFGH. Fields of R contain only atomic values. F={CH→G, A→BC, B→CFH, E→A, F→EG} is a set of functional dependencies (FDs) so that F+ is exactly the set of FDs that hold for R.

### Question 1

How many candidate keys does the relation R have?

* (A) 3
* (B) 4
* (C) 5
* (D) 6

**Answer: D**

### Question 2

The relation R is:

* (A) in 1NF, but not in 2NF
* (B) in 2NF, but not in 3NF
* (C) in 3NF, but not in BCNF
* (D) in BCNF

**Answer: C**

## Question 3

Consider two transactions T1 and T2, and four schedules S1, S2, S3, S4 of T1 and T2 as given below:

T1 = R1[X] W1[X] W1[Y]  
T2 = R2[X] R2[Y] W2[Y]

S1 = R1[X] R2[X] R2[Y] W1[X] W1[Y] W2[Y]  
S2 = R1[X] R2[X] R2[Y] W1[X] W2[Y] W1[Y]  
S3 = R1[X] W1[X] R2[X] W1[Y] R2[Y] W2[Y]  
S4 = R1[X] R2[Y] R2[X] W1[X] W1[Y] W2[Y]

Which of the above schedules are conflict-serializable?

* (A) S1 and S2
* (B) S2 and S3
* (C) S3 only
* (D) S4 only

**Answer: B**

## Question 4

When is the "ROLLUP" operator for expression or columns within a "GROUP BY" clause used?

* (a) Find the groups that make up the subtotal in a row
* (b) Create group-wise grand totals for the groups indicated in a GROUP BY clause
* (c) Group expressions or columns specified in a GROUP BY clause in one direction, from right to left, for computing the subtotals
* (d) To produce a cross-tabular report for computing subtotals by grouping phrases or columns given within a GROUP BY clause in all available directions

**Answer: C**

## Question 5

Let E1 and E2 be two entities in an E/R diagram with simple single-valued attributes. R1 and R2 are two relationships between E1 and E2, where R1 is one-to-many and R2 is many-to-many. R1 and R2 do not have any attributes of their own. What is the minimum number of tables required to represent this situation in the relational model?

* (a) 2
* (b) 3
* (c) 4
* (d) 5

**Answer: B**

## Question 6

Consider the following two sets of functional dependencies:  
F = (A → C, AC → D, E → AD, E → H)  
G = (A → CD, E → AH)

Choose the correct option:

* (a) Only F covers G
* (b) Only G covers F
* (c) F and G are equivalent
* (d) None of the above

**Answer: D**

## Question 7

Consider the following relational schema:

Students(rollno: integer, sname: string)  
Courses(courseno: integer, cname: string)  
Registration(rollno: integer, courseno: integer, percent: real)

Which of the following queries are equivalent to this query in English? "Find the distinct names of all students who score more than 90% in the course numbered 107"

(I) SELECT DISTINCT S.sname FROM Students as S, Registration as R WHERE R.rollno=S.rollno AND R.courseno=107 AND R.percent >90

(II) ∏sname(σcourseno=107 ∧ percent>90 (Registration ⋈ Students))

(III) {T | ∃S∈Students, ∃R∈Registration ( S.rollno=R.rollno ∧ R.courseno=107 ∧ R.percent>90 ∧T.sname=S.sname)}

(IV) {| ∃SR∃RP ( ∈Students ∧ ∈Registration ∧ RP>90)}

* (A) I, II, III and IV
* (B) I, II and III only
* (C) I, II and IV only
* (D) II, III and IV only

**Answer: A**

## Question 8

Which is the maximum number of super keys for the relation schema R(X,Y,Z,W) with X as the key?

* (a) 12
* (b) 6
* (c) 8
* (d) 9

**Answer: C**

## Question 9

Which of the following is not a type of database?

* (1) Hierarchical
* (2) Network
* (3) Distributed
* (4) Decentralized

**Answer: D**

## Question 10

What is the primary purpose of concurrency control in a DBMS?

* (a) To manage database backups
* (b) To ensure multiple transactions execute without interference
* (c) To reduce storage space
* (d) To increase redundancy

**Answer: B**

## Question 11

What is the purpose of normalization in a database?

* (a) To increase redundancy
* (b) To reduce redundancy and improve data integrity
* (c) To make the database slower
* (d) To delete data from the database

**Answer: B**

## Question 12

The traditional storage of data organized by the customer, stored in separate folders in filing cabinets is an example of which type of 'database' management system?

* (a) Object-oriented database management system
* (b) Relational database management system
* (c) Network database management system
* (d) Hierarchical database management system

**Answer: D**

## Question 13

The query specifying the SQL view is said to be updatable if it meets which of the following conditions?

* (1) Select clause contains relation attribute names but not have expressions, aggregates, or distinct specification
* (2) From clause has 1 relation
* (3) Query does not have group by or having clause
* (4) All of the mentioned

**Answer: D**