

# Database Management Systems (CSN-351)

## Relational Database Design (QA)

**BTech 3rd Year (CS) + Minor + Audit**

Instructor: **Ranita Biswas**  
Department of Computer Science and Engineering  
Indian Institute of Technology Roorkee  
Roorkee, Uttarakhand - 247 667, India



# Question 1

$AB \rightarrow C, D \rightarrow E, E \rightarrow C$  is a minimal cover for the set of functional dependencies  $AB \rightarrow C, D \rightarrow E, AB \rightarrow E, E \rightarrow C$ . True or false?

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**ANSWER: false**

## Question 2

Consider a schema  $R(A, B, C, D)$  and functional dependencies  $A \rightarrow B$  and  $C \rightarrow D$ . Then the decomposition of  $R$  into  $R1(AB)$  and  $R2(CD)$  is

- dependency preserving and lossless join
- lossless join but not dependency preserving
- dependency preserving but not lossless join
- not dependency preserving and not lossless join

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## Question 3

$R(A, B, C, D)$  is a relation. Which of the following does not have a lossless join, dependency preserving BCNF decomposition?

- $A \rightarrow B, B \rightarrow CD$
- $A \rightarrow B, B \rightarrow C, C \rightarrow D$
- $AB \rightarrow C, C \rightarrow AD$
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## Question 4

Consider the relation  $X(P, Q, R, S, T, U)$  with the following set of functional dependencies

$$F = \{\{P, R\} \rightarrow \{S, T\}, \{P, S, U\} \rightarrow \{Q, R\}\}$$

Which of the following is the trivial functional dependency in  $F^+$  (closure of  $F$ )?

- $\{P, R\} \rightarrow \{S, T\}$
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ANSWER:  $\{BC \rightarrow A, BC \rightarrow F, F \rightarrow D, F \rightarrow E\}$