NATIONAL INSTITUTE OF TECHNOLOGY GOA

Department of Computer Science Engineering

Test-2

Subject: Database Systems/Database Management Systems   Date: 02-12-2021

Duration: 11.30 AM – 12.30 Noon   Max. Marks: 25

Answer the following questions:

1. What is the design of a relational schema guideline-1? Explain. (5 Marks)
2. What are Insert, delete and update anomalies? Explain with necessary example.(5 Marks)
3. What is the design of a relational schema guideline-2? Explain. (5 Marks)
4. What is a lossless decomposition? Give necessary conditions. Justify whether the following relational schema decomposing based on Functional decomposition is lossless decomposition or not.

    $R = (A, B, C)$
    $F = \{A \rightarrow B, B \rightarrow C)$ (5 Marks)

5. What is functional dependency?
    a. Compute all functional dependency for the following relational schema:

A	B	C	D
a1	b1	c1	d1
a1	b2	c1	d2
a2	b2	c2	d2
a2	b3	c2	d3
a3	b3	c2	d4

    b. Computer the closure of F^+ for the following relational schema $R = (A, B, C, G, H, I)$ with the following functional dependencies:

    $F = \{ \ A \rightarrow B$
    $A \rightarrow C$
    $CG \rightarrow H$
    $CG \rightarrow I$
    $B \rightarrow H\}$ (5 Marks)

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