School of Computer and Systems Sciences
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Database Management Systems (CS-111)
Mid-Semester-II Examination (MCA)
(Winter Semester - 2019)

Date: 10-04-2019
Maximum Marks: 20
Duration: 1 hour

All questions are compulsory

Q1. Consider relation R(A, B, C, D, E, F, G) with set of functional dependencies AB→C, AC→B, AD→E, B→D, BC→A, F→G. Determine the candidate keys of R.

(3)

Q2. Consider the relation R(A, B, C, D, E) with set of functional dependencies A→B, AC→D, BD→E. Determine the **Two** BCNF decompositions of R and verify whether the decompositions are lossless and dependency preserving.

(5)

Q3. *Verify the following statements with appropriate justification:*

(a) Though every BCNF decomposition is not dependency preserving, BCNF is stronger and preferred over 3NF.

(b) A relation in 4NF is also in BCNF.

(4)

Q4. Find the canonical covers F_c for the set of functional dependencies F {A→BC, B→CA, C→AB}

(4)

Q5. Define Join Dependency. Consider a relation R(A, B, C) that exhibits join dependency JD*(AB, BC, AC). Let the instance of R contain tuples {(a1, b1, c1), (a1, b2, c2)}. Determine relation T after

(a) A tuple (a2, b2, c1) is inserted to R to arrive at a relation S.

(b) A tuple (a2, b2, c1) is deleted from S to arrive at a relation T.

(4)