SET - A

National Institute of Technology Calicut

Department of Computer Science and Engineering

CS3095D DBMS Lab

Time: 30 minutes **Test II** **Marks: 06**

Answer all Questions

Upload the answer script as pdf file in Eduserver

Submission I, Normalization

Consider a data management system for an educational institution for managing the academic details. The student and teacher personal details are recorded in two relations *student_details* and *teacher_details*. The marks of each student is stored in another relation *marks_details* subject wise. Each teacher is mapped to one or more subjects in relation *teacher_subject_mapping*. All the subjects available are stored in *subject_details.* Each student is assigned a faculty as an advisor for a semester. The following relational schemas are present in the system. All attributes are single valued.

student_details (roll_no, student_name, dob, age, phone_number, address, branch, year, semester)
student_advisor_mapping(roll_no, id)
teacher_details (id, faculty _name, number, branch)
marks_details (roll_no, year, semester, sub_name, branch, grade)
subject_details (sub_name, branch, year, semester)
teacher_subject_mapping (id, sub_name, branch, semester)

Answer all questions

1. Maximum number of super keys for the relational schema *teacher_details* with *id* as a key is ____ (1 Mark)

2. Is the relation *teacher_subject_mapping* with the functional dependencies

   (sub_name, branch) $\rightarrow$ *semester, semester* $\rightarrow$ *year* in BCNF? (1 Mark)

3. The schema *student_details* is in which highest normal form? Explain? (1 Mark)

4. Is the relation *student_advisor_mapping* in BCNF? Why? (1 Mark)

5. The relation is *subject_details* with functional dependencies (*sub_name, branch)* $\rightarrow$ *year,* (*sub_name, branch)* $\rightarrow$ *semester, semester* $\rightarrow$ *year* is in 3NF. True or False? Explain. (2 Marks)

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