

AHSANULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Course No: CSE4125

Course Title: Distributed Database Systems

Fall 2020 | Quiz – 2 | Marks 15 | Time: 60 Minutes (50+10) | Set - A

1. Consider the global relational schema $R(ID, NAME, GENDER, AGE)$
 Given the following fragmentation schema:

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$$R_1 = PJ_{ID, NAME} R$$

$$R_2 = PJ_{ID, GENDER, AGE} R$$

$$R_3 = SL_{GENDER = M} (PJ_{ID, GENDER, AGE} R)$$

$$R_4 = SL_{GENDER = F} (PJ_{ID, GENDER, AGE} R)$$

$$R_5 = PJ_{ID, AGE} (SL_{GENDER = M} (PJ_{ID, GENDER, AGE} R))$$

$$R_6 = SL_{AGE > 20} (PJ_{ID, AGE} (SL_{GENDER = M} (PJ_{ID, GENDER, AGE} R)))$$

$$R_7 = SL_{AGE \leq 20} (PJ_{ID, AGE} (SL_{GENDER = F} (PJ_{ID, GENDER, AGE} R)))$$

$$R_8 = SL_{AGE > 20} (PJ_{ID, AGE} (SL_{GENDER = F} (PJ_{ID, GENDER, AGE} R)))$$

$$R_9 = SL_{AGE \leq 20} (PJ_{ID, AGE} (SL_{GENDER = M} (PJ_{ID, GENDER, AGE} R)))$$

Draw the Fragmentation Tree.

2. Consider the following relation **STUDENT**.

| SNUM | SNAME | DEPT | SEM |
|------|-------|------|-----|
| 1 | A | CSE | 1 |
| 2 | B | EEE | 2 |
| 3 | C | CSE | 3 |
| 4 | D | EEE | 4 |
| 5 | E | CSE | 6 |
| 6 | F | CSE | 7 |

$$STUDENT_1 = SL_{DEPT = CSE} STUDENT$$

$$STUDENT_2 = SL_{DEPT = EEE} STUDENT$$

APP₁ = SELECT * FROM STUDENT WHERE DEPT = 'CSE' OR DEPT = 'EEE';

APP₂ = SELECT * FROM STUDENT₁ WHERE SEM = 6;

- a. Write an application that moves a student whose **SNUM** and **DEPT** are given at the terminal to the other department at Level – 2 of distribution transparency. 5
- b. Determine the set of simple predicates P_r to obtain **STUDENT** from its fragments. If **APP₁** and **APP₂** are issued, do you think P_r will be complete? If not, then make necessary changes to make the set complete. Justify your answers. 6