

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**)

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Given the following fragmentation schema:

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

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

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

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

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

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

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

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

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

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

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

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

$$APP_1 = \text{SELECT } * \text{ FROM STUDENT WHERE DEPT = 'CSE' OR DEPT = 'EEE';}$$

$$APP_2 = \text{SELECT } * \text{ FROM } STUDENT_1 \text{ WHERE SEM = 6;}$$

- 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