

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

Course No: CSE4125

Course Title: Distributed Database Systems

Fall 2019 | Quiz – 3 | Marks 10 | Time: 30 Minutes

1. Consider the following global and fragmentation schemata.

Global Schema:

*DOCTOR (DNUM, NAME, DEPT)*

*PATIENT (PNUM, NAME, DEPT, TREAT, DNUM)*

*CARE (PNUM, DRUG, QUAN)*

Fragmentation schema:

$DOCTOR_1 = SL_{DEPT = "SURGERY"} DOCTOR$

$DOCTOR_2 = SL_{DEPT = "PEDIATRICS"} DOCTOR$

$DOCTOR_3 = SL_{DEPT \neq "SURGERY" \text{ AND } DEPT \neq "PEDIATRICS"} DOCTOR$

$PATIENT_1 = SL_{DEPT = "SURGERY" \text{ AND } TREAT = "INTENSIVE"} PATIENT$

$PATIENT_2 = SL_{DEPT = "SURGERY" \text{ AND } TREAT \neq "INTENSIVE"} PATIENT$

$PATIENT_3 = SL_{DEPT \neq "SURGERY"} PATIENT$

$CARE_1 = CARE \text{ SJ}_{PNUM = PNUM} PATIENT_1$

$CARE_2 = CARE \text{ SJ}_{PNUM = PNUM} PATIENT_2$

$CARE_3 = CARE \text{ SJ}_{PNUM = PNUM} PATIENT_3$

Assume that a patient is always assigned to the same department as his or her doctor. Attribute DNUM and PNUM indicates Department Number and Patient Number respectively. **Draw the join graphs of the following joins and classify them:**

- |    |   |   |
|----|---|---|
| a. | $DOCTOR \text{ JN}_{DNUM = DNUM} PATIENT$ | 1 |
| b. | $DOCTOR \text{ JN}_{NAME = NAME} PATIENT$ | 1 |
| c. | $DOCTOR \text{ JN}_{DEPT = DEPT} PATIENT$ | 1 |
| d. | $PATIENT \text{ NJN } CARE$               | 1 |

2. Write down the differences between **Vertical Partitioning** and **Vertical Clustering**. 2
3. What is the top – down approach to design a distributed database system? Does this approach satisfy **Heterogeneous Data Distribution**? Explain your answer. 2+2