

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

Course No: CSE4125

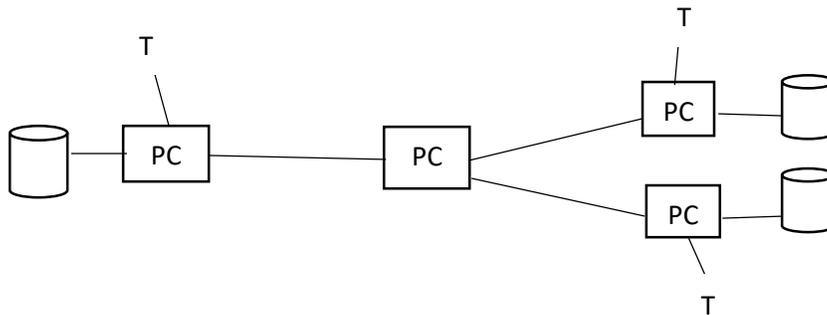
Course Title: Distributed Database Systems

Fall 2020 | Class Assessment – 1 | Marks 15 | Time: 35 (25+10) Minutes

1.

UNIVERSITY\_DDB

A university has three campuses at three different locations. At each campus, a mainframe computer controls the terminals and maintains the student database of that campus. Each computer with its local student database constitutes one site at one campus. Refer to the following figure for better understanding. During normal operations the applications which are requested from the terminals of a campus need only to access the database of that campus. Moreover, one campus can also request an application from its own terminal to access the database located at another campus. Each campus uses the same distributed database management system named 'Oracle'.



- Do you think the given UNIVERSITY\_DDB scenario supports an appropriate distributed database system? State reason behind your answer. 4
  - In which situation a Distributed Database Management System will become heterogeneous? Which type of remote access method will you prefer if it becomes a heterogeneous system? Describe the method briefly. 5
2. If R and S are the input relations, and T is the output relation, for which relational algebraic operations the following statements are true? Explain with example. 6
- $\text{grade}(R) = \text{grade}(T) - \text{grade}(S)$
  - $\text{cardinality}(R) > \text{cardinality}(T)$
  - $\text{grade}(R) - \text{grade}(T) = 0$