

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

Course No: CSE4125

Course Title: Distributed Database Systems

Fall 2019 | Quiz – 1 | Marks 20 | Time: 40 Minutes | Set - A

1. Answer the following questions.
  - a. Define distributed database. 2
  - b. Write down the differences between homogeneous and heterogeneous distributed database systems. 4
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. 4
  - i.  $\text{grade}(R) = \text{grade}(T) - \text{grade}(S)$
  - ii.  $\text{cardinality}(R) > \text{cardinality}(T)$

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3. Given three relations R, S, T. We want to perform the following query Q.  
Where,  $Q = PJ_a (R \cup S)$

Card ( R ) = 3000

Card ( S ) = 1000

Card ( T ) = 4000

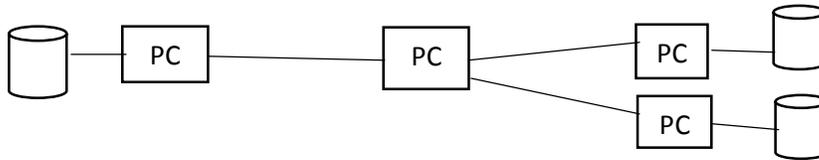
	a	b	c	d
Size	6	7	2	10
Val	3000	1000	30	500

	a	c	b	d
Size	6	7	2	10
Val	1000	20	500	100

	a	m	n
Size	6	5	4
Val	4000	10	5

Assume that , the result of (R UN S) has no duplicate values in attribute ‘a’

- Is the database profile correct? Mention and rewrite the errors if any. 1
  - Estimate the cardinality of the result of query Q. Indicate necessary formulas applied to estimate. 4
  - What is the output of  $size(R \ SJ_{a=a} T)$ ? 1
- 4.. 4



Do you think this is an appropriate distributed database system? Explain your answer.