April 2024 Examinations

CSC 343 H1S

Duration: **3 hours**

Question 1. [7 marks]

Part (a) [2 marks] For each of the following, circle the properties that are guaranteed:

1. A decomposition that satisfies BCNF

   [No redundancy] Has lossless joins Preserves FDs None are guaranteed

2. A decomposition that satisfies 3NF

   No redundancy Has lossless joins Preserves FDs [None are guaranteed]

3. A decomposition that was generated by the BCNF decomposition algorithm

   [No redundancy] [Has lossless joins] Preserves FDs None are guaranteed

4. A decomposition that was generated by the 3NF synthesis algorithm

   No redundancy [Has lossless joins] [Preserves FDs] None are guaranteed

Part (b) [1 mark] Suppose you decompose a relation R with 6 attributes and 5 tuples into two smaller relations R1 and R2. How many tuples could possibly be in R1 $\bowtie$ R2? Circle all of the numbers that are possible.