

Mini Quiz 4
CS 203: Discrete Structures
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INSTRUCTIONS: A student should consider the last two digits of his or her roll number. Divide it by 4. Take the remainder. Suppose the student gets i ($0 \leq i \leq 3$) as remainder. Then the student should answer $(i + 1)^{th}$ numbered question. For example, if the last two digits are 20, the student should answer question number 1. Answer it in a paper, take a clear picture and submit your answer in jpg or pdf format in classroom. An event named Mini Quiz 4 is created in classroom. Submit it there. The name of the jpg or pdf file should be your roll number. You are given 5 minutes to answer and 5 minutes to upload.

1. How many positive integers less than 900 are relatively prime to 900? Explain using Euler's Totient Function.
2. Give an example of a finite group that has 20 elements? Define the group clearly. Does there exist a subgroup of 15 elements? Justify.
3. What is the inverse of $(p-1)$ in the group $(\mathbb{Z}/(p\mathbb{Z}))^*$, where p is prime? State Wilson's theorem, Fermat's little theorem clearly.
4. Define isomorphism and homomorphism between groups clearly? Give an example for each.