**COMP2012 (Fall 2022) Discrete Mathematics**

Quiz 1. 10:00pm-11:00pm, 7th October 2022

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Student ID: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Marks: / 100

* This is an **individual** quiz.
* Please submit the **soft copy** of your answer to Blackboard (as a doc/docx/pdf file).

**Q1)** Let A be a set and B be a set. **[30 marks]**

Prove that .

**Q2)** Show that is . **[30 marks]**

**Q3)** Prove by induction that for all , is divisible by 4. **[20 marks]**

**Q4)** Prove by contradiction that in any group of 7 people there is a person who knows an even number of people. You may assume that if a person  “knows” a person , then person  also “knows” person . *(Hint: If for each person you count the number of acquaintances, what can you say about their total?)*  **[20 marks]**

End of Quiz 1