MA 101.3
Mathematics for Computing
Sets Theory Assessment
June 24, 2022

1. Describe the following terms briefly using your own examples.
   a. Empty Set
   b. Finite Sets & Infinite Sets
   c. Subset
   d. Equal Sets

2. State which of the following statements are true and which are false. Justify your answer.
   a. $37 \notin \{x \mid x$ has exactly two positive factors$\}$
   b. $28 \in \{y \mid$ the sum of the all positive factors of y is 2y$\}$
   c. $7{,}747 \in \{t \mid t$ is a multiple of 37$\}$

3. If X and Y are subsets of the universal set U, then show that
   a. $Y \subset X \cup Y$
   b. $X \cap Y \subset X$
   c. $X \subset Y \Rightarrow X \cap Y = X$

4. Given that N = {1, 2, 3, ..., 100}, then
   a. Write the subset A of N, whose element are odd numbers.
   b. (ii) Write the subset B of N, whose element are represented by x + 2, where $x \in N$

5. An advertising agency finds that, of its 170 clients, 115 use Television, 110 use Radio and 130 use Magazines. Also 85 use Television and Magazines, 75 use Television and Radio, 95 use Radio and Magazines, 70 use all the three. Draw Venn diagram to represent these data.
   a. Find how many uses only Radio?
   b. Find how many uses only Television?
   c. Find how many uses Television and Magazine but not radio?