Self-Assessment Quiz: Set Theory (Lecture 1)

Ungraded Quiz – For Practice and Understanding

Q1. A well-defined collection of distinct objects is called a:

(a) Relation

(b) Function

(c) Set

(d) Sequence

Q2. Which of the following represents a set in **tabular form**?

(a) $A = \{x \in N \mid x \leq 5\}$

(b) $A =$ set of first five natural numbers

(c) $A = \{1, 2, 3, 4, 5\}$

(d) $A =$ set of positive integers less than 5

Q3. The **set builder form** of $\{1, 3, 5, 7, 9\}$ is:

(a) $\{x \in N \mid x \text{ is odd}\}$

(b) $\{x \in Z \mid x \text{ is even}\}$

(c) $\{x \in Q \mid x \text{ is rational}\}$

(d) $\{x \in N \mid x < 9\}$

Q4. Which of the following is the set of all integers?

(a) $N = \{1, 2, 3, 4, \ldots\}$

(b) $W = \{0, 1, 2, 3, \ldots\}$

(c) $Z = \{\ldots, -2, -1, 0, 1, 2, \ldots\}$

(d) $R = \{x \mid x \text{ is real}\}$

Q5. If $A = \{1, 3, 5\}$ and $B = \{1, 2, 3, 4, 5\}$, then A is:

(a) A superset of B

(b) A proper subset of B

(c) Equal to B

(d) Not related to B

Q6. Which of the following is a **null set**?

(a) $\{x \mid x \text{ is an even number less than } 10\}$

(b) $\{x \mid x^2 = 4, x \text{ is odd}\}$

(c) $\{x \mid x \text{ is a positive number}\}$

(d) $\{x \mid x \text{ is a vowel in ENGLISH}\}$

Q7. If $A \subseteq B$ and $B \subseteq C$, then:

(a) $C \subseteq A$

(b) $A \subseteq C$

(c) $B \subseteq A$

(d) None of these

Q8. Two sets A and B are equal if:

(a) A and B contain different elements

(b) A is a proper subset of B

(c) Every element of A is in B and every element of B is in A

(d) A and B have different cardinalities

Q9. The complement of a set A, denoted by A^c, represents:

(a) The universal set

(b) Elements not in A

(c) The subset of A

(d) The intersection of A with itself

Q10. According to DeMorgan's Law, $(A \cup B)^c =$:

(a) $A^c \cup B^c$

(b) $A^c \cap B^c$

(c) $A \cap B$

(d) $A^c - B$

Answers (for self-check):
1(c), 2(c), 3(a), 4(c), 5(b), 6(b), 7(b), 8(c), 9(b), 10(b)