

	00114 - DISCRETE MATHEMATICS [S][SUMMER 19-20]
Q.	Questions.
1.	What is the truth value of $\forall x P(x)$, where $P(x)$ is the statement " $x^2 < 10$ " and the domain consists of the positive integers less than 4?
2.	What is the truth value of $\exists x P(x)$, where $P(x)$ is the statement " $x^3 > 60$ " and the universe of discourse consists of the natural numbers less than 5?
3.	<p>Translate each of the statements into logical expressions using predicates, quantifiers, and logical connectives. Let the domain be all people.</p> <ul style="list-style-type: none"> a) No one is perfect. b) Not everyone is perfect. c) All your friends are perfect. d) At least one of your friends is perfect. e) Everyone is your friend and is perfect. f) Not everybody is your friend or someone is not perfect.
4.	If $A = \{1, 2\}$, $B = \{a, b\}$, $C = \{x, y, z\}$, what is $A \times B \times C$?
5.	Let $B = \{x \mid x \text{ is a natural number and } x \leq 4\}$. Find out the power set of the set B and the cardinality of $P(P(B))$.
6.	<p>Let $A = \{1, 3, 4, 5, 6\}$ and $B = \{x \mid x \text{ is an odd positive integer and } x < 10\}$.</p> <p>Find out $A \cup B$, $A \cap B$, $B - A$ and $A \oplus B$.</p>
7.	Use membership table Show that $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$.

2 from (1-3), and 3 from (4-7)