Name: **Class ID:**

CSE 1400 Applied Discrete Mathematics

Fall 2013 Sets

1. Let the set of digits $\mathbb{D} = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\}$ be the universe. Let $\mathbb{E} = \{0, 2, 4, 6, 8\}$ and $\mathbb{T} = \{0, 3, 6, 9\}$. Find each of the following sets.

   (a) $\mathbb{E} \cup \mathbb{T}$
   Answer:
   $$\mathbb{E} \cup \mathbb{T} = \{0, 2, 3, 4, 6, 8, 9\}$$

   (b) $\mathbb{E} \cap \mathbb{T}$
   Answer:
   $$\mathbb{E} \cap \mathbb{T} = \{0, 6\}$$

   (c) $\neg\mathbb{E}$
   Answer:
   $$\neg\mathbb{E} = \{1, 3, 5, 7, 9\}$$

2. Using the sets above, are the following Boolean statements `True` or `False`?

   (a) $3 \in \mathbb{D}$
   Answer: $3 \in \mathbb{D}$ is `True`.

   (b) $3 \in \mathbb{E}$
   Answer: $3 \in \mathbb{E}$ is `False`.

   (c) $3 \notin \mathbb{T}$
   Answer: $3 \notin \mathbb{T}$ is `False`.

3. Using the sets above, what is:

   (a) $|\mathbb{D}|$
   Answer: $|\mathbb{D}| = 10$

   (b) $|\mathbb{E}|$
   Answer: $|\mathbb{E}| = 5$

   (c) $|\mathbb{T}|$
   Answer: $|\mathbb{T}| = 4$

Total Points: 0 Friday, September 6, 2013