

Answer the questions in the space provided below. You may use the back of the page if you need more space. Time: 15 minutes.

Name and section: _____

1. Let A be a finite set, such that $\emptyset \neq A$ and $A \subseteq \mathbb{N}$. Let $\mathcal{P}(A) = \{A_1, A_2, \dots, A_n\}$. Determine whether each proposition is true or false. You do **not** have to justify your answers.

(a) $A \subseteq \mathcal{P}(A)$ (10)

(b) $\bigcup_{i=1}^n A_i \subseteq \mathbb{N}$ (10)

(c) $\bigcup_{i=1}^n A_i \subseteq \mathcal{P}(A)$ (10)

(d) $\forall i \in \{1, 2, \dots, n\} : |A_i| < |A|$ (10)

(e) $\exists X : X \in \mathcal{P}(A) \wedge |X| = 0$ (10)

2. Let $A = \{1, 2, \{3, 4\}\}$. Write down $\mathcal{P}(A)$, the power set of A , by listing all of its elements. (50)