

2. (a) (3 marks) Let \mathcal{F} be a collection of subsets of a set Ω . Provide the three necessary conditions for \mathcal{F} to be an *algebra*.
- (b) (2 marks) Let $\Omega = \{1, 2, 3\}$. Construct the *smallest algebra* from the collection of subsets of Ω , $\mathcal{C} = \{\{1\}, \{2\}\}$.