

I: Given $A = \{1, 2, 5\}$ and $B = \{2, 4, 6\}$

Find the following:

- 1) $A \cup B$
- 2) $A \cap B$
- 3) $A - B$
- 4) $B - A$
- 5) $A \times B$
- 6) $P(A)$
- 7) $A \oplus B$

II: True or False (If False, correct the statement to make it true)

- 1) $\{x\} \subseteq \{x\}$
- 2) $\{x\} \subseteq \{x, \{x\}\}$
- 3) $\{x\} \in \{x, \{x\}\}$
- 4) $\{\emptyset\} \subseteq \{x\}$
- 5) $\{x, y\} = \{y, x\}$

III: If $A = \{1, 2\}$ and $B = \{2, 3\}$ Then find the following:

- 1) $P(A \cap B)$
- 2) $P(A \cup B)$
- 3) $P(A) \cup P(B)$
- 4) $P(A) \cap P(B)$

IV: If A , B and C are sets then prove the following or give a counter example:

- 1) $P(A \cup B) = P(A) \cup P(B)$
- 2) $P(A \cap B) = P(A) \cap P(B)$
- 3) If $A \subseteq B \rightarrow A \cap C \subseteq B \cap C$

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