

Important Questions 4

Question 1: Let $U = \{1,2,3,4,5,6, x, y, \{1,2\}, \{1,2,3\}, \{1,2,3,4\}\}$,

$A = \{1,2,3,4\}$ and $B = \{\{1,2\}, \{1,2,3\}, 1\}$,

- (1) [a] $|U| = 17$. [b] $|U| = 11$. [c] $|U| = 9$. [d] $|U| = 13$.
- (2) [a] $A \cap B = \{1,2,3\}$. [b] $A \cap B = \emptyset$. [c] $A \cap B = \{1\}$. [d] $A \cap B = \{\{1,2\}\}$.
- (3) [a] $A - B = \{2,3,4\}$. [b] $A - B = \{4\}$. [c] $A - B = \{3,4\}$. [d] $A - B = \{1,4\}$.
- (4) [a] $\overline{A \cup B} = \{5,6, x, y, \{1,2,3,4\}\}$. [b] $\overline{A \cup B} = \{x, y, 5,6\}$.
- (5) [a] $|B| = 6$. [b] $|B| = 3$. [c] $|B| = 5$. [d] $|B| = 4$.
- (6) $|A \times B| = 7$. [b] $|A \times B| = 10$. [c] $|A \times B| = 12$. [d] $|A \times B| = 8$.

Question 2: Let $A = \{\emptyset, 1\}$ and $B = \{\{1\}, 2, \{\emptyset\}\}$.

- (1) [a] $\emptyset \in A$ and $\emptyset \subseteq A$. [b] $\emptyset \in A$ and $\emptyset \not\subseteq A$. [c] $\emptyset \notin A$ and $\emptyset \subseteq A$.
- (2) [a] $\emptyset \in B$ and $\emptyset \subseteq B$. [b] $\{\emptyset\} \in B$ and $\{\{\emptyset\}\} \subseteq B$. [c] $\emptyset \subseteq B$ and $\{\emptyset\} \subseteq B$.
- (3) $\{(\emptyset, \emptyset), (\emptyset, 1)\}$ is a relation :
[a] on A . [b] on B . [c] from A to B . [d] from B to A .
- (4) $\{(\emptyset, \{\emptyset\}), (1, \{1\}), (\emptyset, 2)\}$ is a relation :
[a] on A . [b] from B to A . [c] on B . [d] from A to B .
- (5) There are 16 relations :
[a] on A . [b] on B . [c] from A to B . [d] from B to A .
- (6) There are 512 relations :
[a] on A . [b] on B . [c] from A to B . [d] from B to A .
- (7) there are 64 relations :
[a] on A . [b] on B . [c] from A to B . [d] from $(A - B)$ to $(B - A)$.

Question 3: $\overline{((A \cup B) \cap C)} \cup \bar{B} =$

[a] $C \cap B$. [b] $C \cup B$. [c] $\overline{C \cap B}$. [d] $A \cap C$.

Question 4: $\neg[\neg[(p \vee q) \wedge r] \vee \neg q]$ is logically equivalent to:

[a] $q \wedge r$. [b] $p \vee r$. [c] $p \vee q$. [d] $q \vee r$.

Question 5: $\overline{A - B} =:$

[a] $\bar{B} \cup A$. [b] $\bar{A} \cup B$. [c] $A \cap \bar{B}$. [d] $\bar{A} \cap B$.

Question 6 : Let A and B be two sets such that:

$A - B = \{1,3,7,11\}$, $B - A = \{2,6,8\}$, and $A \cap B = \{4,9\}$ then

[a] $A = \{1,3,7,4,9,11\}$, $B = \{4,9,2,6,8\}$. [b] $A = \{6,8,2,9,4\}$, $B = \{11,7,1,3\}$.

[c] $A = \{11,8,9,2\}$, $B = \{9,4,7,11\}$. [d] $A = \{6,3,7,8\}$, $B = \{6,8,11,1\}$.

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صفحة ٣

$A = \{\emptyset, 1\}$ and $B = \{\{1\}, 2, \{\emptyset\}\}$

$A \times \{\emptyset\} = \{(\emptyset, \emptyset), (1, \emptyset)\}$.

$B \times \{\emptyset\} = \{(\{1\}, \emptyset), (2, \emptyset), (\{\emptyset\}, \emptyset)\}$.