

Department of Basic Sciences — Philadelphia University

Exam 1

Discrete Structures

07–04–2016

Part I. (2 points each) Multiple choice: circle one answer.

1. $\neg(p \wedge \neg q) \equiv$

(A) $p \vee \neg q$

(B) $\neg p \vee q$

(C) $p \wedge \neg q$

(D) $\neg p \wedge q$

2. $A \oplus (A - B) =$

(A) $A \cap B$

(B) $A \cup B$

(C) $A - B$

(D) $B - A$

3. Let $A = \{1, 2, 3, 4\}$ and $B = \{1, 3, 5\}$. Then $|P(A \cup B)| =$

(A) 4

(B) 8

(C) 16

(D) 32

4. $\text{GCD}(642, 351) =$

(A) 0

(B) 1

(C) 2

(D) 3

5. How many permutations with A, B, C, D, E do not have 'BA' ?

(A) 96

(B) 114

(C) 178

(D) 600

6. Let $|A| = 12$. How many subsets of A have 10 elements?

(A) 91

(B) 78

(C) 66

(D) 55

Part II. (4 points each) Write complete solution on the separate blank page provided.

7. Convert the proposition $(P \rightarrow Q) \oplus R$ to CNF.

8. From 1 to 300, how many are multiples of 15 or 10 or 12 ?

–Amin Witno