Department of Basic Sciences — Philadelphia University

Exam 1 **Discrete Structures** **18–11–2015**

Part I. (1 point each) Multiple choice: circle one answer.

1. $p \to q \equiv$

   (A) $p \vee q$ (B) $\neg p \vee q$ (C) $p \vee \neg q$ (D) $\neg p \vee \neg q$

2. $(p \wedge \neg q) \vee \neg p$ is a

   (A) tautology (B) contradiction (C) contingency (D) false

3. $\{1, 2, 3, 4, 5\} \oplus \{2, 3, 5, 7\} =$

   (A) $\{1, 4\}$ (B) $\{2, 5\}$ (C) $\{2, 5, 7\}$ (D) $\{1, 4, 7\}$

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

   (A) 2 (B) 4 (C) 8 (D) 32

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

   (A) $A - B$ (B) $B - A$ (C) $A \cup B$ (D) $A \cap B$

6. Which number is a multiple of 7 ?

   (A) 222 (B) 225 (C) 245 (D) 256

7. Let $|A| = 10$. How many subsets of A contain 7 elements?

   (A) 120 (B) 210 (C) 165 (D) 330

8. How many permutations with A, B, C, D, E, F, G contain 'ED' and "FC' ?

   (A) 6 (B) 24 (C) 120 (D) 720

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

9. Evaluate GCD $(4242, 540)$.
10. Convert the proposition $(P \to Q) \leftrightarrow R$ to CNF.
11. From 1 to 300, how many are multiples of 8 or 10 or 12 ?

–Amin Witno