(1) Select the only one correct answer for each question.

- 1. Suppose the logic function Y = $\prod$ M (1, 2, 3, 4, 6). We have the minterms contained in the function Y as ( ).

  (A) m_5 (B) m_1, m_7 (C) m_0, m_5 ,m_7 D. m_2

- 2. The logic function $G = \overline{X \odot Y \odot Z} + W$ is equal to ( ).

  (A) $G = X \oplus Y \oplus Z + W$ (B) $G = \overline{X \oplus Y \oplus Z} + W$

  (C) $G = XY\overline{Z}W$ (D) $G = XY\overline{Z}W + X\overline{Y}ZW$

(2) Write your answers in the blanks.

- 1. Suppose $F = \overline{A}BD + (BC + D)\overline{AC}$, then $\overline{F}$=_____, the corresponding dual function F^d = _____.

(3) Simplify the functions.

- 1. Use Boolean algebra to find a minimal sum-of-products expression for the function Y.

$$Y = \overline{A}BC\overline{D}E + A\overline{B}\cdot\overline{C} + A\overline{B}C\overline{D} + ABD + \overline{A}CD\overline{E} + B\overline{C}DE + \overline{A}$$

- 2. Use Karnaugh map to simplify the following logical function, and write the minimal product-of-sums expression.

$$F = AB + AD + \overline{B}D + B\overline{D}$$