Computer Architecture
Assignment 4
Digital Logic

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1. (a) $F(A,B) = \overline{AB} + A\bar{B} + AB$
   (b) $F(A,B,C) = \overline{ABC} + ABC$
   (c) $F(A,B,C) = \overline{ABC} + \bar{A}B\bar{C} + A\overline{BC} + A\bar{B}C + ABC$
   (d) $F(A,B,C,D) = \overline{ABCD} + \overline{ABC}D + \overline{AB}C\bar{D} + \overline{AB}CD + A\overline{BCD} + A\bar{B}C\bar{D} + ABC\bar{D}$
   (e) $F(A,B,C,D) = \overline{ABCD} + \overline{AB}CD + \bar{A}B\bar{C}D + \bar{A}BC\bar{D} + A\overline{BC}D + A\bar{B}C\bar{D} + AB\overline{CD} + ABCD$
2. (a) $Y = \Sigma(0,2,3)$
   (b) $Y = \Sigma(0,7)$
   (c) $Y = \Sigma(0,2,4,5,7)$
   (d) $Y = \Sigma(0,1,2,3,8,10,14)$
   (e) $Y = \Sigma(0,3,5,6,9,10,12,15)$
3. (a) $K = \bar{B}A$
   (b) $K = \overline{\bar{A}C + B + A\bar{C}}$
   (c) $K = \bar{A}C + AB + AC$
   (d) $K = \overline{AB} + \overline{BD} + AC\bar{D}$
   (e) $K = \overline{BCD} + \bar{A}CD + B\bar{C}D + BC\bar{D}$