

CS2100 Assignment 3 Answer Book

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Save this file as AxxxxxxxY.pdf and submit on Canvas. You do NOT need to create a zip file.

You will forfeit up to 3 marks if you do not fill your particulars above, or do not follow the submission instructions.

Submission information: _____ / 3

Question 1. (6 MARKS)

- (a) (2 marks) $F(A,B,C,D) = \Sigma m(\textit{6, 15})$
- (b) (2 marks) $G(A,B,C,D) = \Sigma m(\textit{8, 10, 12})$
- (c) (2 marks) $H(D,C,B,A) = \Sigma m(\textit{null})$

Q1 Total: _____ / 6

Question 2. (6 MARKS)

- (a) (2 marks) $X(A,B,C) = \Pi M(\textit{0, 3, 6, 7})$
- (b) (2 marks) $Y(A,B,C,D) = \Pi M(\textit{0, 1, 2, 3, 6, 7, 8, 10, 11, 13, 14, 15})$
- (c) (2 marks) $Z(C,B,A) = \Pi M(\textit{1, 2, 4, 6})$

Q2 Total: _____ / 6

Question 3. (7 MARKS)

- (a) (3 marks)

$$F = \textit{A' + B' \cdot C'}$$

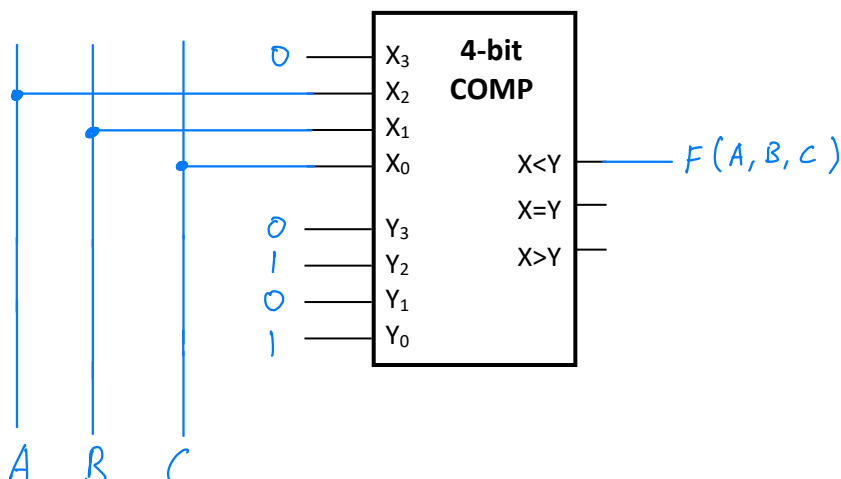
$$G = \textit{A' \cdot B + B \cdot C' + A \cdot B' \cdot C}$$

$$H = \textit{C}$$

- (b) (2 marks)

"The circuit converts a 3-bit *Sign and Magnitude* to 3-bit *excess 4 code*."

- (c) (2 marks)

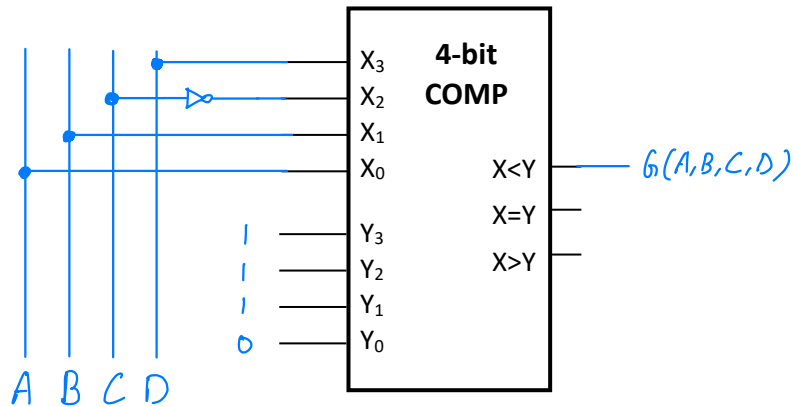


Q3 Total: _____ / 7

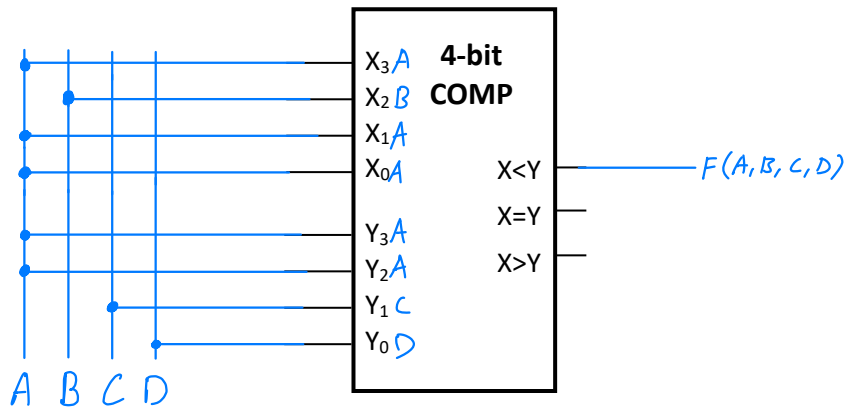
Question 4. (7 MARKS)

(a) (2 marks) $F(A,B,C,D) = B \cdot C' \cdot D' + A \cdot C' + A \cdot B \cdot D'$

(b) (2 marks)



(c) (3 marks)



Q4 Total: _____ / 7

Question 5. (5 MARKS)

$$F_2 = A_7 + A_6 + A_5 + A_4$$

$$F_1 = A_7' \cdot A_5 + A_7' \cdot A_6 + A_4' \cdot A_5' \cdot A_6' \cdot A_7'$$

$$F_0 = A_1 \cdot A_6' \cdot A_5' \cdot A_4' \cdot A_5' \cdot A_6' \cdot A_7' + A_2 \cdot A_3' \cdot A_4' \cdot A_5' \cdot A_6' \cdot A_7' + A_0 \cdot A_1' \cdot A_2' \cdot A_3' \cdot A_4' \cdot A_5' \cdot A_6' \cdot A_7'$$

Q5 Total: _____ / 5

Question 6. (6 MARKS)

(a) (2 marks) State $(111)_2$

(b) (2 marks) State $(010)_2$

(c) (2 marks) $(010)_2, (000)_2$

Q6 Total: _____ / 6

Total Marks: _____ / 40 (To be filled by TA only)

=== END OF PAPER ===