

EEM16 Quiz #1

Hiromu Ikeda

TOTAL POINTS

20 / 20

QUESTION 1

1 Part (a) and Part (b) **8 / 8**

- **0** (a) Correct
- **0** (b) Correct

QUESTION 2

2 Part (c), Part (d), and Part (e) **12 / 12**

- **0** (c) Correct
- **0** (d) Correct
- **0** (e) Correct

Quiz #1

Name (Last, First): Ikeda, Hironu

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Do not start working until instructed to do so.

1. You must answer in the **space provided** for answers after every question. We will ignore answers written anywhere else in the booklet. **All pages in this booklet must be accounted** for otherwise it will not be graded.
2. This quiz is closed book/notes.
3. You may not use any electronic device.

Following table to be filled by course staff only

	Maximum Score	Your Score
TOTAL	20	

Consider the Boolean function defined by the truth table below where A, B, and C are inputs, and Y is the sole output.

A	B	C	Y
0	0	0	1
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	X

(a) Without doing any logic minimization, write the expression for Y in Fully-Disjunctive Normal Form.

$$Y = (\bar{a} \wedge \bar{b} \wedge \bar{c}) \vee (\bar{a} \wedge b \wedge c) \vee (a \wedge \bar{b} \wedge \bar{c}) \vee (a \wedge b \wedge \bar{c})$$

Show supporting work below:

$$\begin{array}{ccccccc}
 (0, 0, 0) \vee (0, 1, 1) \vee (1, 0, 0) \vee (1, 0, 1) & \Rightarrow & 1 \\
 \downarrow \downarrow \downarrow & & \downarrow \downarrow \downarrow & & \downarrow \downarrow \downarrow & & \downarrow \downarrow \downarrow \\
 (\bar{A} \bar{B} \bar{C}) \vee (\bar{A} B C) \vee (A \bar{B} \bar{C}) \vee (A \bar{B} C)
 \end{array}$$

(b) Use the function in (a), write the expression for $\neg Y$ in Fully-Disjunctive Normal Form.

$$\neg Y = (\bar{a} \wedge \bar{b} \wedge c) \vee (\bar{a} \wedge b \wedge \bar{c}) \vee (a \wedge b \wedge \bar{c})$$

Show supporting work below:

$$\begin{array}{ccccccc}
 (0, 0, 1) \vee (0, 1, 0) \vee (1, 1, 0) & \Rightarrow & 0 \\
 \downarrow \downarrow \downarrow & & \downarrow \downarrow \downarrow & & \downarrow \downarrow \downarrow & & \downarrow \downarrow \downarrow \\
 (\bar{A} \bar{B} C) \vee (\bar{A} B \bar{C}) \vee (A B \bar{C})
 \end{array}$$

