|  |  |
| --- | --- |
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| **Degree Name:** | Computer science and information technology (GY350) |
| **Assessment:** | EI140 EEE-CA-4 |

|  |  |
| --- | --- |
| **Choice** | **Representation** |
| rock | 00 |
| paper | 01 |
| lizard | 10 |
| Spock | 11 |

player A wins : 00

player B wins : 11

no one wins (draw) : 01

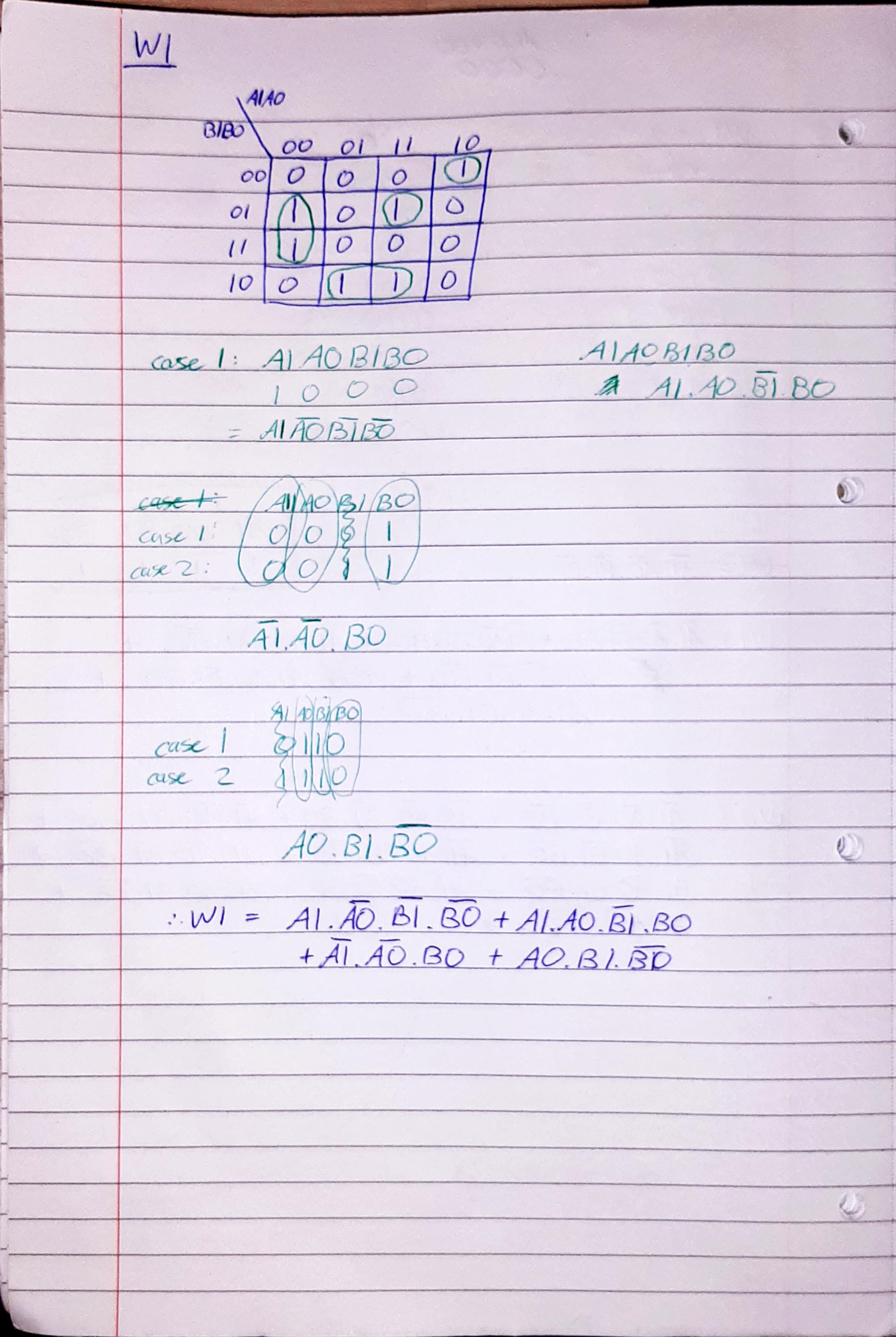
Truth table

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **A1** | **A0** | **B1** | **B0** |  | **W1** | **W0** |
| 0 | 0 | 0 | 0 |  | 0 | 1 |
| 0 | 0 | 0 | 1 |  | 1 | 1 |
| 0 | 0 | 1 | 0 |  | 0 | 0 |
| 0 | 0 | 1 | 1 |  | 1 | 1 |
| 0 | 1 | 0 | 0 |  | 0 | 0 |
| 0 | 1 | 0 | 1 |  | 0 | 1 |
| 0 | 1 | 1 | 0 |  | 1 | 1 |
| 0 | 1 | 1 | 1 |  | 0 | 0 |
| 1 | 0 | 0 | 0 |  | 1 | 1 |
| 1 | 0 | 0 | 1 |  | 0 | 0 |
| 1 | 0 | 1 | 0 |  | 0 | 1 |
| 1 | 0 | 1 | 1 |  | 0 | 0 |
| 1 | 1 | 0 | 0 |  | 0 | 0 |
| 1 | 1 | 0 | 1 |  | 1 | 1 |
| 1 | 1 | 1 | 0 |  | 1 | 1 |
| 1 | 1 | 1 | 1 |  | 0 | 1 |

Boolean function for W1

W1 = A1’.A0’.B1’.B0 + A1’.A0’.B1.B0 + A1’.A0.B1.B0’ + A1.A0’.B1’.B0’ + A1.A0.B1’.B0 + A1.A0.B1.B0’

Karnaugh map for W1

and the sum of products for W1

Boolean function for W0

W0 = A1’.A0’.B1’.B0’ + A1’.A0’.B1’.B0 + A1’.A0’.B1.B0 + A1’.A0.B1’.B0 + A1’.A0.B1.B0’ + A1.A0’.B1’.B0’ + A1.A0’.B1.B0’ + A1.A0.B1’.B0 + A1.A0.B1.B0’ + A1.A0.B1.B0

A piece of paper with writing

Description automatically generated with medium confidenceKarnaugh map for W0  
and the sum of products for W0

LEDControl

Decide which player has won, if any. Only activate a player’s led if they won.

player A wins : 00

player B wins : 11

no one wins (draw) : 01

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| W1 | W0 |  | PlayerAWins | PlayerBWins |
| 0 | 0 |  | 1 | 0 |
| 0 | 1 |  | 0 | 0 |
| 1 | 1 |  | 0 | 1 |

PlayerAWins = W1’.W0’

PlayerBWins = W1.W0