**Computer Logic lab Lab 6**

**M.Hyland R00086913**

1. Complete the following truth table for a binary decoder:

# Truth Table:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| A | B | O0 | O1 | O2 | O3 | Product of Terms |
| 0 | 0 | 1 | 0 | 0 | 0 |  |
| 0 | 1 | 0 | 1 | 0 | 0 |  |
| 1 | 0 | 0 | 0 | 1 | 0 |  |
| 1 | 1 | 0 | 0 | 0 | 1 |  |

2. Design a circuit, which implements the binary decoder outlined in the truth table above. Verify its operation using Easysim and copy the circuit below.

## Circuit:

3. Draw the black box representation and complete the truth table for a 3 to 8 binary decoder:

3 to 8

4. Design a circuit which implements a 3 to 8 binary decoder outlined in the truth table above. Verify its operation using Easysim and copy the circuit below.

**Circuit:**

5. Complete the following truth table for a multiplexer.

## Truth Table:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| A | B | C0 | C1 | C2 | C3 | Output | Product of Terms |
| 0 | 0 | 0 | x | x | X | 0 |  |
| 0 | 1 | x | 0 | x | X | 0 |  |
| 1 | 0 | x | x | o | X | 0 |  |
| 1 | 1 | x | x | x | O | 0 |  |
| 0 | 0 | 1 | x | x | X | 1 |  |
| 0 | 1 | X | 1 | X | X | 1 |  |
| 1 | 0 | X | X | 1 | X | 1 |  |
| 1 | 1 | x | x | x | 1 | 1 |  |

6. Design a circuit which implements the multiplexer outlined in the truth table above. Verify its operation using Easysim and copy the circuit below..

**Circuit:**