**#QUESTION 1**

1. **Boolean Algebra**

F = ( A’ ⋅ ( A’ D )’ )’ ⋅ ( A’ + BC )

= A + ( A’ D ) ⋅ ( A’ + BC )

**=** (A + A’D ) ⋅ ( A’ + BC )

**=** ABC + A’D + A’BCD

**=** ABC + A’D ( 1 + BC )

🡺 F = ABC + A’D

1. **K-Map**

G = ( A’D )’ ⋅ (A’ +BC )

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| A | B | C | D | (A ‘ D)’ | (A’ + BC) | G |
| 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 0 | 0 | 1 | 0 | 1 | 1 | 1 |
| 0 | 0 | 1 | 1 | 0 | 1 | 0 |
| 0 | 1 | 0 | 0 | 1 | 1 | 1 |
| 0 | 1 | 0 | 1 | 0 | 1 | 0 |
| 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| 0 | 1 | 1 | 1 | 0 | 1 | 0 |
| 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| 1 | 0 | 0 | 1 | 1 | 0 | 0 |
| 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| 1 | 0 | 1 | 1 | 1 | 0 | 0 |
| 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| 1 | 1 | 0 | 1 | 1 | 0 | 0 |
| 1 | 1 | 1 | 0 | 1 | 1 | 1 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CD**  **AB** | **00** | **01** | **11** | **10** |
| **00** | **1** |  |  | **1** |
| **01** | **1** |  |  | **1** |
| **11** |  |  | **1** | **1** |
| **10** |  |  |  |  |

**0000**

**0100**

**0010 1111**

**0110 1110**

A’⋅1⋅1 D’ A⋅B⋅C

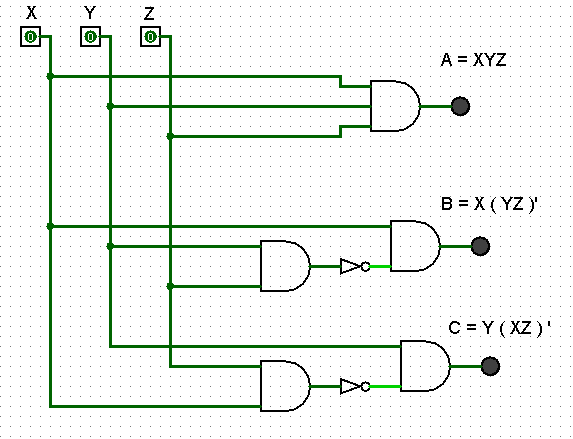
ANS 🡺 G = A’D’ + ABC

**#QUESTION 2**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Input XYZ 10 | X | Y | Z | Output ABC 10 | A | B | C |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 2 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 3 | 0 | 1 | 1 | 1 | 0 | 0 | 1 |
| 4 | 1 | 0 | 0 | 2 | 0 | 1 | 0 |
| 5 | 1 | 0 | 1 | 2 | 0 | 1 | 0 |
| 6 | 1 | 1 | 0 | 3 | 0 | 1 | 1 |
| 7 | 1 | 1 | 1 | 4 | 1 | 0 | 0 |

* Finding the expression of ABC, from their respective outputs.

1. A = X ⋅Y ⋅Z
2. B = X ⋅ ( Y⋅Z ) ‘
3. C = Y ⋅ ( X⋅Z )’

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