

**a)**  $x = A'B + C$

| A | B | C |  | x |
|---|---|---|--|---|
| 0 | 0 | 0 |  | 0 |
| 0 | 0 | 1 |  | 1 |
| 0 | 1 | 0 |  | 1 |
| 0 | 1 | 1 |  | 1 |
| 1 | 0 | 0 |  | 0 |
| 1 | 0 | 1 |  | 1 |
| 1 | 1 | 0 |  | 0 |
| 1 | 1 | 1 |  | 1 |

**b)**  $x = (A + B)(B + C')$

| A | B | C |  | x |
|---|---|---|--|---|
| 0 | 0 | 0 |  | 0 |
| 0 | 0 | 1 |  | 0 |
| 0 | 1 | 0 |  | 1 |
| 0 | 1 | 1 |  | 1 |
| 1 | 0 | 0 |  | 1 |
| 1 | 0 | 1 |  | 0 |
| 1 | 1 | 0 |  | 1 |
| 1 | 1 | 1 |  | 1 |

**c)**  $x = (AB)'(C + D)$

| A | B | C | D |  | x |
|---|---|---|---|--|---|
| 0 | 0 | 0 | 0 |  | 0 |
| 0 | 0 | 0 | 1 |  | 1 |
| 0 | 0 | 1 | 0 |  | 1 |
| 0 | 0 | 1 | 1 |  | 1 |
| 0 | 1 | 0 | 0 |  | 0 |
| 0 | 1 | 0 | 1 |  | 1 |
| 0 | 1 | 1 | 0 |  | 1 |
| 0 | 1 | 1 | 1 |  | 1 |
| 1 | 0 | 0 | 0 |  | 0 |
| 1 | 0 | 0 | 1 |  | 1 |
| 1 | 0 | 1 | 0 |  | 1 |
| 1 | 0 | 1 | 1 |  | 1 |
| 1 | 1 | 0 | 0 |  | 0 |
| 1 | 1 | 0 | 1 |  | 0 |
| 1 | 1 | 1 | 0 |  | 0 |
| 1 | 1 | 1 | 1 |  | 0 |

**d)**  $x = A \oplus B \oplus C$

$y = AB + B'C + AC$

| A | B | C |  | x | y |
|---|---|---|--|---|---|
| 0 | 0 | 0 |  | 0 | 0 |
| 0 | 0 | 1 |  | 1 | 1 |
| 0 | 1 | 0 |  | 1 | 0 |
| 0 | 1 | 1 |  | 0 | 0 |
| 1 | 0 | 0 |  | 1 | 0 |
| 1 | 0 | 1 |  | 0 | 1 |
| 1 | 1 | 0 |  | 0 | 1 |
| 1 | 1 | 1 |  | 1 | 1 |