A)

|  |  |  |  |
| --- | --- | --- | --- |
| p | q | ∼p | ∼p ^ q |
| V | V | F | F |
| V | F | F | F |
| F | V | V | V |
| F | F | V | F |

B)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| p | q | (p^ q) | ∼ (p^ q) | (p v q) | ∼ (p^ q) v (p v q) |
| V | V | V | F | V | V |
| V | F | F | V | V | V |
| F | V | F | V | V | V |
| F | F | F | V | f | V |

C)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| p | q | r | (q^r) | p^(q^r) |
| V | V | V | V | V |
| V | F | V | F | F |
| V | V | F | F | F |
| V | F | F | F | F |
| F | V | V | V | F |
| F | F | V | F | F |
| F | V | F | F | F |
| F | F | F | F | F |

D)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| p | q | r | ∼q | (∼q v r) | P^ (∼q v r) |
| V | V | V | F | V | V |
| V | F | V | V | V | V |
| V | V | F | F | F | F |
| V | F | F | V | V | V |
| F | V | V | F | V | F |
| F | F | V | V | V | F |
| F | V | F | F | F | F |
| F | F | F | V | V | F |