**Exam #1 - Question 16**

**Question 16:**

A Boolean function f(x,y,z,w) has four inputs. The input combinations (x,y,z,w) that have an output value of 1 are: (0,1,0,1), (1,1,0,0), (1,0,0,1), (1,1,0,1), (0,1,1,1).

1. Draw the Karnaugh map for this Boolean function.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Z’W’** | **Z’W** | **ZW** | **ZW’** |
| **X’Y’** | **0** | **0** | **0** | **0** |
| **X’Y** | **0** | **1** | **1** | **0** |
| **XY** | **1** | **1** | **0** | **0** |
| **XY’** | **0** | **1** | **0** | **0** |

(b) Write the Boolean polynomial for this function that corresponds to the above Karnaugh map.

**X’YW + XZ’W + XYZ’**