Simplification with Karnaugh Maps

Part A For the Karnaugh map below, circle the prime implicants. Then list each product term derived from the map indicating which are essential. You won't necessary need all lines.

prime implicant   essential?

yes ☐   no ☐

_____

yes ☐   no ☐

_____

yes ☐   no ☐

_____

yes ☐   no ☐

_____

yes ☐   no ☐

_____

yes ☐   no ☐

_____

yes ☐   no ☐

_____

Part B Write the simplified sun of products expression for this Karnaugh map.

$F_{(A,B,C,D)} =$

Part C Write the simplified product of sums expression for this Karnaugh map.

$F_{(A,B,C,D)} =$