$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$

$m(CH_4) = 0.16$ g

$m(O_2) = 0.25$ g

$M(CH_4) = 12 + 1 \cdot 4 = 16$ g/mol

$M(O_2) = 16 \cdot 2 = 32$ g/mol

$n(CH_4) = \frac{m}{M} = \frac{0.16\ g}{16 \frac{g}{mol}} = 0.01$ mol

$n(O_2) = \frac{m}{M} = \frac{0.25\ g}{32 \frac{g}{mol}} = 0.0078$ mol

O_2 is the limiting reactant/

$n(H_2O) = 0.0078$ mol

$m(H_2O) = n \cdot M = 0.0078 mol \cdot 18 g/mol = 0.14$ g

Percent yield = $\frac{Actual\ mass\ of\ product}{Predicted\ mass\ of\ product} \cdot 100\%$

Percent yield of water = $\frac{0.122\ g}{0.14\ g} = 87.14$ %