Two oxides of a metal have 72.4% and 70% of metal respectively. If formula of second oxide is M_2O_3, find that of first

Solution.

For Oxygen we have $w(\%) = 100 - 70 = 30$; $Ar(O) = 16$;

Due to the law of proportion - [%/Ar]

$70/x : 30/16 = 2:3$,

$70/x : 1.875 = 2:3$, where $x = 56$ (Fe)

Then, if $w(O) = 100 - 72.4 = 27.6$ (%)

$72.4/56 : 27.6/16 = 1.2928 : 1.725 = 1 : 1.334 = 3 : 4$

Answer : M_3O_4 (Fe_3O_4) .