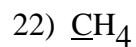
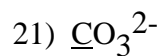
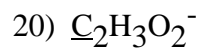
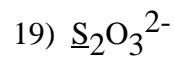
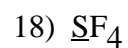
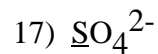
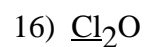
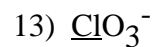
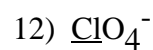
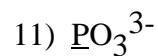
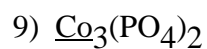
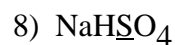
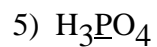
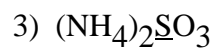


## Oxidation Numbers

Determine the oxidation number of the underlined element. (Answers on back.)

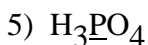




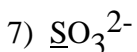
$$\begin{aligned} X_{\text{N}} + 4(+1) &= +1 \\ X_{\text{N}} &= -3 \end{aligned}$$



$$\begin{aligned} 2(+1) + X_{\text{S}} + 3(-2) &= 0 \\ X_{\text{S}} &= +4 \end{aligned}$$



$$\begin{aligned} 3(+1) + X_{\text{P}} + 4(-2) &= 0 \\ X_{\text{P}} &= +5 \end{aligned}$$



$$\begin{aligned} X_{\text{S}} + 3(-2) &= -2 \\ X_{\text{S}} &= +4 \end{aligned}$$



$$\begin{aligned} 3X_{\text{Co}} + 2(-3) &= 0 \\ 3X_{\text{Co}} &= +6; \quad X_{\text{Co}} = +2 \end{aligned}$$



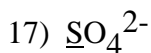
$$\begin{aligned} X_{\text{P}} + 3(-2) &= -3 \\ X_{\text{P}} &= +3 \end{aligned}$$



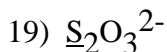
$$\begin{aligned} X_{\text{Cl}} + 3(-2) &= -1 \\ X_{\text{Cl}} &= +5 \end{aligned}$$



$$\begin{aligned} X_{\text{Cl}} + 1(-2) &= -1 \\ X_{\text{Cl}} &= +1 \end{aligned}$$



$$\begin{aligned} X_{\text{S}} + 4(-2) &= -2 \\ X_{\text{S}} &= +6 \end{aligned}$$



$$\begin{aligned} 2X_{\text{S}} + 3(-2) &= -2 \\ 2X_{\text{S}} &= +4; \quad X_{\text{S}} = +2 \end{aligned}$$



$$\begin{aligned} X_{\text{C}} + 3(-2) &= -2 \\ X_{\text{C}} &= +4 \end{aligned}$$



$$\begin{aligned} X_{\text{Mn}} + 2(-2) &= 0 \\ X_{\text{Mn}} &= +4 \end{aligned}$$



$$\begin{aligned} 1(+1) + X_{\text{P}} + 4(-2) &= -2 \\ X_{\text{P}} &= +5 \end{aligned}$$



$$\begin{aligned} 1(+1) + X_{\text{Br}} + 1(-2) &= 0 \\ X_{\text{Br}} &= +1 \end{aligned}$$



$$\begin{aligned} 1(+1) + 1(+1) + X_{\text{S}} + 4(-2) &= 0 \\ X_{\text{S}} &= +6 \end{aligned}$$



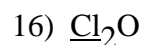
$$\begin{aligned} X_{\text{Mn}} + 4(-2) &= -1 \\ X_{\text{Mn}} &= +7 \end{aligned}$$



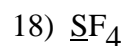
$$\begin{aligned} X_{\text{Cl}} + 4(-2) &= -1 \\ X_{\text{Cl}} &= +7 \end{aligned}$$



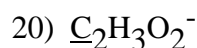
$$\begin{aligned} X_{\text{Cl}} + 2(-2) &= -1 \\ X_{\text{Cl}} &= +3 \end{aligned}$$



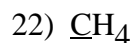
$$\begin{aligned} 2X_{\text{Cl}} + 1(-2) &= 0 \\ 2X_{\text{Cl}} &= +2; \quad X_{\text{Cl}} = +1 \end{aligned}$$



$$\begin{aligned} X_{\text{S}} + 4(-1) &= 0 \\ X_{\text{S}} &= +4 \end{aligned}$$



$$\begin{aligned} 2X_{\text{C}} + 3(+1) + 2(-2) &= -1 \\ 2X_{\text{C}} &= 0; \quad X_{\text{C}} = 0 \end{aligned}$$



$$\begin{aligned} X_{\text{C}} + 4(+1) &= 0 \\ X_{\text{C}} &= -4 \end{aligned}$$