The cyanide process of gold extraction involves leaching out gold from its ore with CN- in the presence of Q in water to form R. Subsequently, R is treated with T to obtain Au and Z. Choose the correct option(s)

A. Q is 02

B. R is [Au(CN)4]-

C. Z is [Zn(CN)4]2-

D. T is Zn

Solution: (A, C and D)

Extraction of gold is usually done by leaching with dil. solution of NaCN in the presence of air (O2).

According to the question,

$$Au \xrightarrow{CN^-, Q} R \xrightarrow{T} Au + Z$$

The complete reactions are

$$Au + 2CN^- + O_2 \stackrel{H_2O}{\longrightarrow} [Au(CN)_2]^- (aq) + OH^-$$

$$[Au(CN)_2]^-(aq) + \underset{T}{Zn(s)} \rightarrow Au(s) + [Zn(CN)_4]^{2-}$$