1. What is the O-C-O bond angle in CO2?
   A) 109°
   B) 120°
   C) 180°
   D) None of the above

2. CO2 reacts with water to form carbonic acid, H$_2$CO$_3$ = (HO)$_2$CO. What is the O-C-O bond angle in carbonic acid?
   A) 180°
   B) 120°
   C) 109°
   D) None of the above

3. Carbonic acid reacts with water to form hydrogen carbonate ion, (HO)CO$_2$-. What is the O-C-O bond angle in hydrogen carbonate ion?
   A) 180°
   B) 120°
   C) 109°
   D) None of the above

4. Carbonic acid reacts with water to form hydrogen carbonate ion, (HO)CO$_2$-. What is the H-O-C bond angle in hydrogen carbonate ion?
   A) 180°
   B) 120°
   C) 109°
   D) None of the above

5. Hydrogen carbonate ion reacts with water to form carbonate ion, CO$_3^{2-}$. What is the O-C-O bond angle in carbonate ion?
   A) 180°
   B) 120°
   C) 109°
   D) None of the above

6. Estimate the pH assuming 0.035 M carbonic acid reacts with water 100% to form hydrogen carbonate ion,
   (HO)CO(aq) + H$_2$O(l) $\rightleftharpoons$ H$_3$O$^+$aq) + HO$_2$CO$^-$aq)
   A) pH = -log(3.5 x 10^-2) = 1.0
   B) pH = -log(3.5 x 10^-2) = 1.5
   C) pH = -log(3.5 x 10^-2) = 2.0
   D) pH = -log(3.5 x 10^-2) = 3.5
7. Estimate the pH assuming 0.035 M carbonic acid reacts with water 100% to form carbonate ion,

\[(\text{HO})_2\text{CO}(aq) + 2 \text{H}_2\text{O}(l) \rightarrow 2 \text{H}_3\text{O}^+(aq) + \text{CO}_3^{2-}(aq)\]

A. \(\text{pH} = -2 \times \log(3.5 \times 10^{-2}) = 3.0\)
B. \(\text{pH} = -2 \times \log(3.5 \times 10^{-2}) = 3.0\)
C. \(\text{pH} = -2 \times \log(3.5 \times 10^{-2}) = 4.0\)
D. None of these