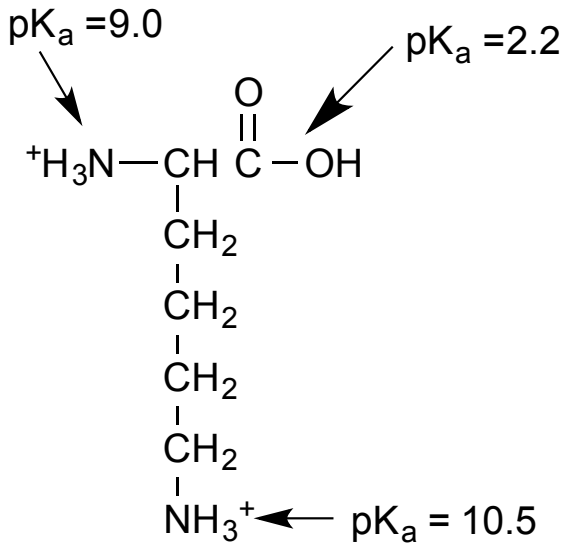
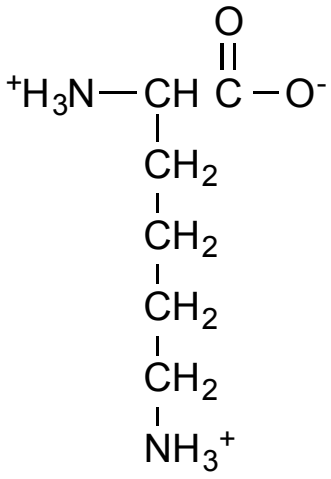
Which structure do you predict the amino acid lysine to have at pH 7.4?

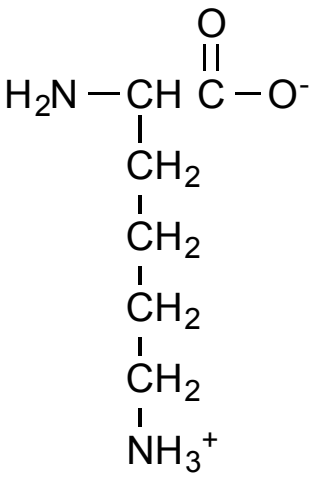
1. Structure A
2. Structure B
3. Structure C
4. Structure D
5. Structure E



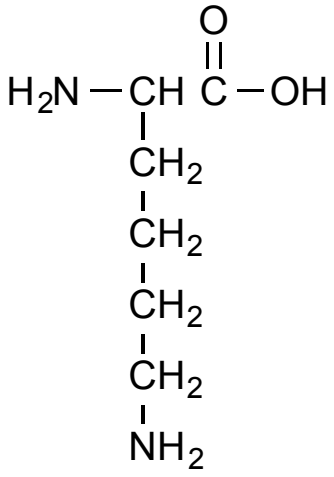
Structure A



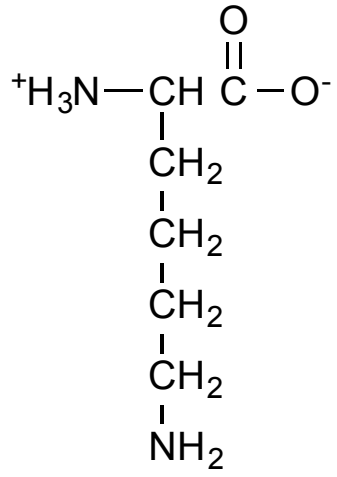
Structure B



Structure C



Structure D



Structure E

Which structure do you predict the amino acid lysine to have at pH 7.4?

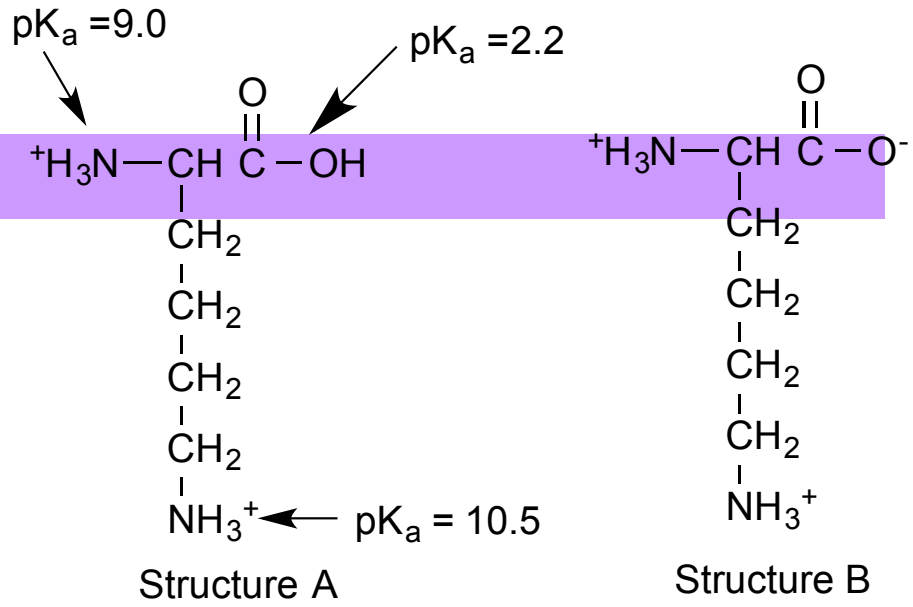
11% 1. Structure A

54% ✓ 2. Structure B

7% 3. Structure C

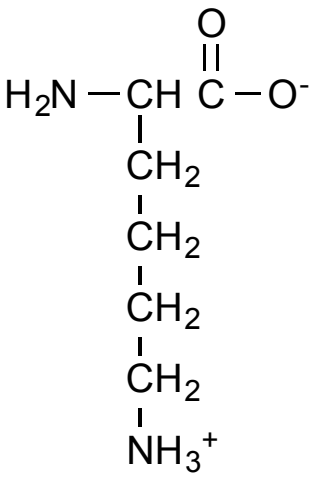
19% 4. Structure D

9% 5. Structure E

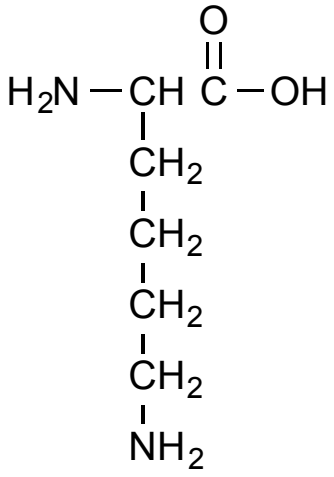


Structure A

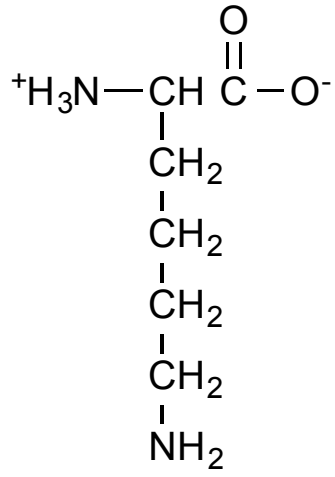
Structure B



Structure C



Structure D



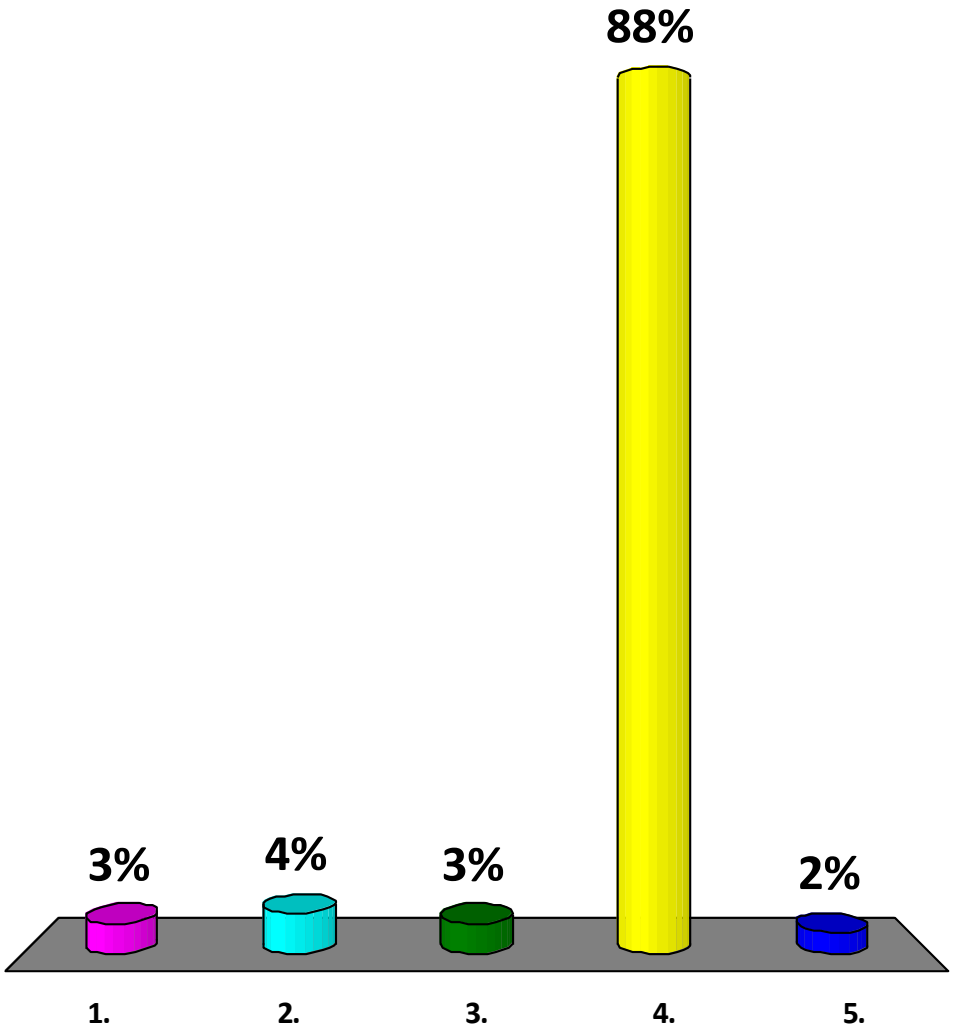
Structure E

What is the oxidation number of nitrogen in N_2O?

1. -2
2. -1
3. 0
4. +1
5. +2

What is the oxidation number of nitrogen in N_2O?

1. -2
2. -1
3. 0
4. +1 ✓
5. +2



For the half reaction:

$Cr_2O_7^{2-} \rightarrow Cr^{3+}$

Cr is…

1. Reduced (it loses electrons)
2. Reduced (it gains electrons)
3. Oxidized (it loses electrons)
4. Oxidized (it gains electrons)

For the half reaction:

$$Cr_2O_7^{2-} \rightarrow Cr^{3+}$$

Cr is…

9% 1. Reduced (it loses electrons)

78%  2. Reduced (it gains electrons)

10% 3. Oxidized (it loses electrons)

2% 4. Oxidized (it gains electrons)

Another cell has utilizes the following redox reactions:

$$Zn\ (s) \rightarrow Zn^{2+}\ (ag) + 2e^-$$

$$Sn^{4+}\ (ag) + 2e^- \rightarrow Sn^{2+}\ (ag)$$

which of the following is likely to be true?

1. anode: $Zn(s) \rightarrow Zn^{2+}(aq) + 2e^-$ (reduction)
   cathode: $Sn^{4+}(aq) + 2e^- \rightarrow Sn^{2+}(aq)$ (oxidation)
2. anode: $Zn(s) \rightarrow Zn^{2+}(aq) + 2e^-$ (oxidation)
   cathode: $Sn^{4+}(aq) + 2e^- \rightarrow Sn^{2+}$ (aq) (reduction)
3. anode: $Sn^{4+}(aq) + 2e^- \rightarrow Sn^{2+}(aq)$ (oxidation)
   cathode: $Zn(s) \rightarrow Zn^{2+}(aq) + 2e^-$ (reduction)
4. anode: $Sn^{4+}(aq) + 2e^- \rightarrow Sn^{2+}$ (aq) (reduction)
   cathode: $Zn(s) \rightarrow Zn^{2+}(aq) + 2e^-$ (oxidation)

Another cell has utilizes the following redox reactions:

$Zn\ (s) \rightarrow Zn^{2+}\ (ag) + 2e^-$

$Sn^{4+}\ (ag) + 2e^- \rightarrow Sn^{2+}\ (ag)$

which of the following is likely to be true?

4%

1. anode: $Zn(s) \rightarrow Zn^{2+}(aq) + 2e^-$ (reduction)
   cathode: $Sn^{4+}(aq) + 2e^- \rightarrow Sn^{2+}(aq)$ (oxidation)

89%

2. anode: $Zn(s) \rightarrow Zn^{2+}(aq) + 2e^-$ (oxidation)
   cathode: $Sn^{4+}(aq) + 2e^- \rightarrow Sn^{2+}(aq)$ (reduction)

3%

3. anode: $Sn^{4+}(aq) + 2e^- \rightarrow Sn^{2+}(aq)$ (oxidation)
   cathode: $Zn(s) \rightarrow Zn^{2+}(aq) + 2e^-$ (reduction)

5%

4. anode: $Sn^{4+}(aq) + 2e^- \rightarrow Sn^{2+}(aq)$ (reduction)
   cathode: $Zn(s) \rightarrow Zn^{2+}(aq) + 2e^-$ (oxidation)

Predict the correct expression for the electrochemical cell:

Anode: $Zn\ (s) \rightarrow Zn^{2+}\ (aq) + 2e^-$

Cathode: $Sn^{4+}\ (aq) + 2e^- \rightarrow Sn^{2+}\ (aq)$

1. $Zn\ (s) \mid Zn^{2+}\ (aq) \parallel Sn^{4+}\ (aq) \mid Sn^{2+}\ (s)$
2. $Zn\ (s) \mid Zn^{2+}\ (aq) \parallel Sn^{4+}\ (aq) \mid Sn^{2+}\ (aq)$
3. $Zn\ (s) \mid Zn^{2+}\ (aq) \parallel Sn^{4+}\ (aq), Sn^{2+}\ (aq)$
4. $Zn\ (s) \mid Zn^{2+}\ (aq) \mid Sn^{4+}\ (aq) \mid Sn^{2+}\ (aq)$
5. $Zn\ (s) \parallel Zn^{2+}\ (aq) \parallel Sn^{4+}\ (aq) \parallel Sn^{2+}\ (aq)$

Predict the correct expression for the electrochemical cell:

Anode: $Zn\ (s) \rightarrow Zn^{2+}\ (aq) + 2e^-$

Cathode: $Sn^{4+}\ (aq) + 2e^- \rightarrow Sn^{2+}\ (aq)$

19% 1. $Zn\ (s) \mid Zn^{2+}\ (aq) \parallel Sn^{4+}\ (aq) \mid Sn^{2+}\ (s)$

41% 2. $Zn\ (s) \mid Zn^{2+}\ (aq) \parallel Sn^{4+}\ (aq) \mid Sn^{2+}\ (aq)$

35% 3. $Zn\ (s) \mid Zn^{2+}\ (aq) \parallel Sn^{4+}\ (aq), Sn^{2+}\ (aq)$

3% 4. $Zn\ (s) \mid Zn^{2+}\ (aq) \mid Sn^{4+}\ (aq) \mid Sn^{2+}\ (aq)$

1% 5. $Zn\ (s) \parallel Zn^{2+}\ (aq) \parallel Sn^{4+}\ (aq) \parallel Sn^{2+}\ (aq)$

What must be happening when $Pt\ (s) \mid H_2\ (g) \mid H^+\ (aq)$ acts as an anode?

1. Pt (s) is oxidized
2. H_2 (g) is oxidized
3. H^+ (aq) is oxidized
4. Pt (s) is reduced
5. H_2 (g) is reduced
6. H^+ (aq) is reduced

What must be happening when $Pt\ (s) \mid H_2\ (g) \mid H^+\ (aq)$ acts as an anode?

17% 1. Pt (s) is oxidized

17% 2. H_2 (g) is oxidized

17% 3. H^+ (aq) is oxidized

17% 4. Pt (s) is reduced

17% 5. H_2 (g) is reduced

17% 6. H^+ (aq) is reduced

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