

This print-out should have 8 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering. V1:1, V2:1, V3:1, V4:1, V5:2.

Please make sure you write your version numbers on your scantron. Good luck!

Ammonia pH

23:08, general, multiple choice, > 1 min, fixed.

001 (part 1 of 1) 5 points

What is the pH of 0.3 M ammonia if the K_a for its conjugate acid, ammonium chloride, is 5.55×10^{-10} ?

1. 11.4 **correct**
2. 4.3
3. 8.7
4. 0.002
5. 2.6

Explanation:

Molar Solubility

25:01, general, multiple choice, > 1 min, fixed.

002 (part 1 of 1) 5 points

What is the molar solubility of $\text{Al}(\text{OH})_3$? The K_{sp} of $\text{Al}(\text{OH})_3$ is 1.0×10^{-33} .

1. 2.5×10^{-9} **correct**
2. 5.6×10^{-9}
3. 4.8×10^{-12}
4. 1.6×10^{-9}
5. 3.7×10^{-9}

Explanation:

Solub Comparison

25:01, general, multiple choice, > 1 min, fixed.

003 (part 1 of 1) 5 points

Rank the following compounds from most

soluble to least soluble. Assume that all bonds except the OH are ionic. (You can estimate this ranking without using a calculator.)

Compound	K_{sp}
Bi_2S_3	1.0×10^{-97}
$\text{Fe}(\text{OH})_2$	1.6×10^{-14}
PbI_2	2.6×10^{-13}
HgS	1.6×10^{-52}

1. $\text{PbI}_2 > \text{Fe}(\text{OH})_2 > \text{Bi}_2\text{S}_3 > \text{HgS}$ **correct**
2. $\text{Bi}_2\text{S}_3 > \text{Fe}(\text{OH})_2 > \text{HgS} > \text{PbI}_2$
3. $\text{PbI}_2 > \text{Fe}(\text{OH})_2 > \text{HgS} > \text{Bi}_2\text{S}_3$
4. $\text{HgS} > \text{PbI}_2 > \text{Fe}(\text{OH})_2 > \text{Bi}_2\text{S}_3$
5. $\text{Fe}(\text{OH})_2 > \text{PbI}_2 > \text{HgS} > \text{Bi}_2\text{S}_3$

Explanation:

Barium Hydroxide pH

23:10, general, multiple choice, > 1 min, fixed.

004 (part 1 of 1) 5 points

What is the pH of 2.0×10^{-9} M $\text{Ba}(\text{OH})_2$?

1. 7.02 **correct**
2. 5.30
3. 8.70
4. 8.40
5. 5.60

Explanation:

Equil in Water

23:50, general, multiple choice, < 1 min, fixed.

005 (part 1 of 1) 5 points

The equations used for calculating simple equilibria in water are accurate only if

1. K_a is significantly greater than K_w and C_a is large. **correct**
2. K_a is significantly greater than K_w and

C_a is small.

3. K_a is significantly smaller than K_w and C_a is small.

4. K_a is significantly smaller than K_w and C_a is large.

Explanation:

Acid Ion Ratio

24:02, general, multiple choice, > 1 min, fixed.

006 (part 1 of 1) 5 points

2 moles of LiOH are added to a solution containing 7 moles of formic acid and 6 moles of sodium formate. After neutralization, what is the ratio of formic acid to formate ions?

1. 5 to 8 **correct**

2. 5 to 6

3. 7 to 8

4. 8 to 5

5. 6 to 5

Explanation:

Buffer

24:01, general, multiple choice, > 1 min, fixed.

007 (part 1 of 1) 5 points

Which of the following mixtures can produce a buffer?

I) $\text{NH}_3 + \text{NaOH}$

II) $\text{NH}_3 + \text{NH}_4\text{Cl}$

III) $\text{H}^+ + \text{OH}^-$

IV) $\text{HClO}_2 + \text{NaClO}_2$

V) $(\text{CH}_3)_3\text{NHCl} + (\text{CH}_3)_3\text{N}$

1. II, IV, and V only **correct**

2. IV only

3. II, III, and IV only

4. I, III, and V only

5. II only

Explanation:

Sol pH

24:99, general, multiple choice, > 1 min, fixed.

008 (part 1 of 1) 5 points

What is the pH of a solution containing equal volumes of 0.6 M CH_3COOH and 0.5 M rubidium acetate? The $\text{p}K_a$ is 4.75.

1. 4.67 **correct**

2. 2.53

3. 4.83

4. 2.49

5. 5.70

Explanation: