

Ionic Equilibrium

JEE Main 2020 Chapterwise

Questions with Answer Keys

Chemistry

Q1 JEE Main 2020 - 2 September (Morning)

For the following Assertion and Reason, the correct option is

Assertion (A): When Cu (II) and sulphide ions are mixed, they react together extremely quickly to give a solid.

Reason (R): The equilibrium constant of

$\text{Cu}^{2+}(\text{aq}) + \text{S}^{2-}(\text{aq}) \rightleftharpoons \text{CuS}(\text{s})$ is high because the solubility product is low.

- (A) (A) is false and (R) is true.
- (B) Both (A) and (R) are true but (R) is not the explanation for (A).
- (C) Both (A) and (R) are true and (R) is the explanation for (A).
- (D) Both (A) and (R) are false.

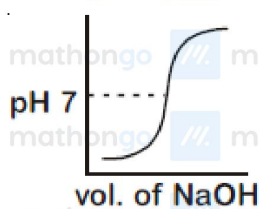
Q2 JEE Main 2020 - 3 September (Morning)

An acidic buffer is obtained on mixing

- (A) 100 mL of 0.1 M HCl and 200 mL of 0.1 M NaCl
- (B) 100 mL of 0.1 M HCl and 200 mL of 0.1 M CH_3COONa
- (C) 100 mL of 0.1 M CH_3COOH and 100 mL of 0.1 M NaOH
- (D) 100 mL of 0.1 M CH_3COOH and 200 mL of 0.1 M NaOH

Q3 JEE Main 2020 - 3 September (Evening)

100 mL of 0.1 M HCl is taken in a beaker and to it 100 mL of 0.1 M NaOH is added in steps of 2 mL and the pH is continuously measured. Which of the following graphs correctly depicts the change in pH?

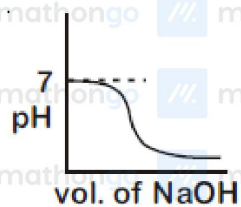


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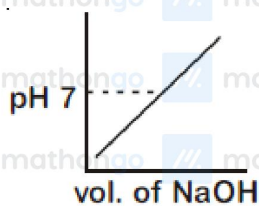
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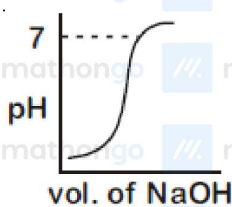
Chemistry



(B)



(C)



(D)

Q4 JEE Main 2020 - 6 September (Morning)

Arrange the following solutions in the decreasing order of pOH

- (A) 0.01M HCl
- (B) 0.01M NaOH
- (C) 0.01M CH_3COONa
- (D) 0.01M NaCl

- (A) $(B) > (C) > (D) > (A)$
- (B) $(A) > (D) > (C) > (B)$
- (C) $(A) > (C) > (D) > (B)$
- (D) $(B) > (D) > (C) > (A)$

Q5 JEE Main 2020 - 6 September (Evening)

If the solubility product of AB_2 is $3.20 \times 10^{-11} \text{M}^3$, then the solubility of AB_2 in pure water is $\times 10^{-4} \text{molL}^{-1}$. [Assuming that neither kind of ion reacts with water]

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Q6 JEE Main 2020 - 7 January (Morning)

Two solutions, *A* and *B*, each of 100 L was made by dissolving 4 g of NaOH and 9.8 g of H_2SO_4 in water, respectively. The pH of the resultant solution obtained from mixing 40 L of solution *A* and 10 L of solution *B* is

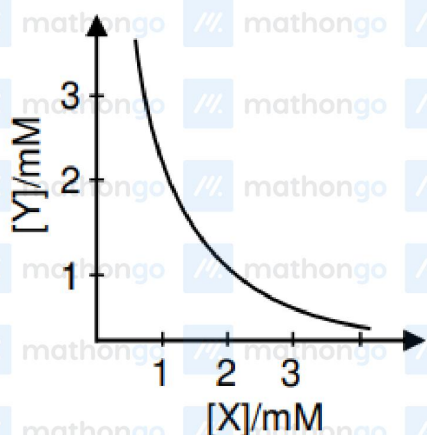
Q7 JEE Main 2020 - 7 January (Evening)

3 gram of acetic acid is mixed in 250 mL of 0.1 M HCl . This mixture is now diluted to 500 mL. 20 mL of this solution is now taken in another container. $\frac{1}{2}$ mL of 5 M NaOH is added to this. Find the pH of this solution. ($\log 3 = 0.4771$, $pK_a = 4.74$)

Multiply your answer with 100

Q8 JEE Main 2020 - 8 January (Morning)

The stoichiometry and solubility product of a salt with the solubility curve given below is, respectively



(A) XY , $K_{sp} = 2 \times 10^{-6}$

(B) XY_2 , $K_{sp} = 4 \times 10^{-9}$

(C) X_2Y , $K_{sp} = 9 \times 10^{-9}$

(D) XY_2 , $K_{sp} = 1 \times 10^{-9}$

Q9 JEE Main 2020 - 8 January (Evening)

For the following Assertion and Reason, the correct option is :

Assertion : The pH of water increases with increase in temperature.

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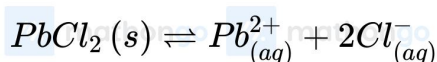
Chemistry

Reason : The dissociation of water into H^+ and OH^- is an exothermic reaction.

- (A) Both assertion and reason are correct and reason is correct explanation of assertion.
- (B) Both assertion and reason are correct and reason is not correct explanation of assertion.
- (C) Assertion is true & reason is false.
- (D) Both assertion and reason are incorrect.

Q10 JEE Main 2020 - 9 January (Morning)

The K_{sp} for the following dissociation is 1.6×10^{-5}



Which of the following choices is correct for a mixture of $300 \text{ mL } 0.134 \text{ M } Pb(NO_3)_2$ and $100 \text{ mL } 0.4 \text{ M } NaCl$?

- (A) $Q > K_{sp}$
- (B) $Q < K_{sp}$
- (C) $Q = K_{sp}$
- (D) Not enough data provided

Q11 JEE Main 2020 - 9 January (Evening)

Amongst the following, the form of water with the lowest ionic conductance at 298 K is:

- (A) distilled water
- (B) sea water
- (C) water from a well
- (D) saline water used for intravenous injection

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Chemistry

Answer Key

Q1 (C)

Q2 (B)

Q3 (A)

Q4 (B)

Q5 (2)

Q6 (10.6)

Q7 (522)

Q8 (B)

Q9 (D)

Q10 (A)

Q11 (A)

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