

11. Which set of solutes will form a buffer when dissolved in water to make 1 liter of solution?

A. 0.0002M HCl

B. 0.2 mole of NaCl with 0.2 mole of HNO₃

C. 0.4 mole of CH₃COOH with 0.4 mole of NaOH

D. 0.4 mole of NH₃ with 0.2 mole of HCl

Answer: Option D

12. Which one of the following aqueous solutions will be basic?

A. NaCl

B. Na₂SO₄

C. Na₂CO₃

D. FeCl₃

Answer: Option C

13. The value of K_w in an acidic aqueous solution at 298 K is

A. $>10^{-14}$

B. $<10^{-14}$

C. 10¹?

D. 10⁻¹?

Answer: Option D

14. Reaction which proceeds in both directions is called

A. reversible

B. irreversible

C. spontaneous

D. non-spontaneous

Answer: Option A

15. Chemical equilibrium state is

A. dynamic state

B. static state

C. free state

D. unidirectional state

Answer: Option A

16. Conversion of reactant into product in unit time is called

- A. rate of forward reaction B. rate of backward reaction
C. rate constant D. rate co-efficient

Answer: Option A

17. At start of reaction the concentration of reactants is

- A. high B. low
C. according to K_c D. constant

Answer: Option A

18. Unit of K_c is

- A. moles²dm⁺⁶ B. moles⁻²dm⁺⁶
C. moles⁺²dm⁻⁶ D. K_c may or may not have units

Answer: Option D

19. In case of gases K_c is replaced by

- A. K_a B. K_b
C. K_p D. K

Answer: Option C

20. Rate expression for ammonia synthesis is

- A. $K_c = x^2 / (a-x)(b-x)$ B. $K_c = x^2 / v(a-x)$
C. $K_c = 4x^2 / (a-2x)^2(b-x)$ D. $K_c = 4x^2 v^2 / (a-x)(b-3x)^3$

Answer: Option D