

CLASS XI CHE CH: 6

SET 2 –

1. Ionic equilibrium deals with –
 - a) Molecular substances only
 - b) Dissociation of electrolytes in solution
 - c) Solid-state reactions
 - d) Non-polar compounds
2. Arrhenius acid is a substance which –
 - a) Gives H^+ ions in water
 - b) Gives OH^- ions in water
 - c) Accepts H^+ ions
 - d) Donates electron pair
3. Arrhenius base is a substance which –
 - a) Produces OH^- ions in water
 - b) Produces H^+ ions in water
 - c) Accepts proton
 - d) Donates proton
4. Bronsted–Lowry acid is –
 - a) Proton donor
 - b) Proton acceptor
 - c) Electron donor
 - d) Electron acceptor
5. Bronsted–Lowry base is –
 - a) Proton acceptor
 - b) Proton donor
 - c) Electron acceptor
 - d) Neutral molecule
6. Conjugate acid–base pairs differ by –
 - a) One proton
 - b) One neutron
 - c) One electron
 - d) One oxygen atom
7. According to Lewis, acid is a –
 - a) Electron pair acceptor
 - b) Electron pair donor
 - c) Proton donor
 - d) Proton acceptor
8. According to Lewis, base is a –
 - a) Electron pair donor
 - b) Electron pair acceptor
 - c) Proton donor
 - d) Neutral molecule
9. Example of a Lewis acid is –
 - a) BF_3

CLASS XI CHE CH: 6

- b) NH_3
 - c) OH^-
 - d) H_2O
10. Example of a Lewis base is –
- a) NH_3
 - b) AlCl_3
 - c) H^+
 - d) BF_3
11. Amphoteric substance acts as –
- a) Both acid and base
 - b) Only acid
 - c) Only base
 - d) Neutral substance
12. Example of amphoteric substance –
- a) H_2O
 - b) HCl
 - c) NH_4^+
 - d) CH_4
13. Self-ionisation of water is represented as –
- a) $\text{H}_2\text{O} \rightleftharpoons \text{H}^+ + \text{OH}^-$
 - b) $\text{H}_2\text{O} + \text{H}_2\text{O} \rightleftharpoons \text{H}_3\text{O}^+ + \text{OH}^-$
 - c) $\text{H}_2\text{O} \rightarrow \text{H}_2 + \text{O}_2$
 - d) None
14. Ionic product of water (K_w) =
- a) $[\text{H}^+][\text{OH}^-]$
 - b) $[\text{H}^+] + [\text{OH}^-]$
 - c) $[\text{H}_2\text{O}]^2$
 - d) None
15. At 25°C , K_w =
- a) 1×10^{-14}
 - b) 1×10^{-7}
 - c) 1×10^{-12}
 - d) 1×10^{-16}
16. In pure water, $[\text{H}^+] = [\text{OH}^-] =$
- a) $1 \times 10^{-7} \text{ M}$
 - b) $1 \times 10^{-14} \text{ M}$
 - c) 1 M
 - d) $1 \times 10^{-6} \text{ M}$
17. $\text{pH} =$
- a) $-\log [\text{H}^+]$
 - b) $\log [\text{H}^+]$
 - c) $1/[\text{H}^+]$
 - d) $-\log [\text{OH}^-]$
18. $\text{pOH} =$
- a) $-\log [\text{OH}^-]$

CLASS XI CHE CH: 6

- b) $\log [\text{OH}^-]$
 - c) $1/[\text{OH}^-]$
 - d) $-\log [\text{H}^+]$
19. At 25 °C, $\text{pH} + \text{pOH} =$
- a) 14
 - b) 7
 - c) 1
 - d) 0
20. The pH of pure water at 25 °C =
- a) 7
 - b) 1
 - c) 14
 - d) 0
21. A solution with $\text{pH} < 7$ is –
- a) Acidic
 - b) Basic
 - c) Neutral
 - d) Salty
22. A solution with $\text{pH} > 7$ is –
- a) Basic
 - b) Acidic
 - c) Neutral
 - d) Buffer
23. A neutral solution at 25 °C has –
- a) $[\text{H}^+] = [\text{OH}^-] = 10^{-7} \text{ M}$
 - b) $[\text{H}^+] = 10^{-1} \text{ M}$
 - c) $[\text{OH}^-] = 10^{-14} \text{ M}$
 - d) $[\text{H}^+] > [\text{OH}^-]$
24. If $[\text{H}^+] = 1 \times 10^{-4} \text{ M}$, $\text{pH} =$
- a) 4
 - b) 10
 - c) 7
 - d) 2
25. If $\text{pH} = 3$, $[\text{H}^+] =$
- a) $1 \times 10^{-3} \text{ M}$
 - b) $1 \times 10^{-7} \text{ M}$
 - c) $1 \times 10^{-1} \text{ M}$
 - d) $1 \times 10^{-4} \text{ M}$
26. As pH decreases, acidity –
- a) Increases
 - b) Decreases
 - c) Remains same
 - d) Becomes zero
27. Strong acid is –
- a) Completely ionised in water

CLASS XI CHE CH: 6

- b) Partially ionised
 - c) Weak electrolyte
 - d) Non-electrolyte
28. Weak acid is –
- a) Partially ionised
 - b) Completely ionised
 - c) Non-ionised
 - d) Strong electrolyte
29. Examples of strong acids –
- a) HCl, HNO₃, H₂SO₄
 - b) CH₃COOH, H₂CO₃
 - c) HF, H₂S
 - d) H₂O, NH₃
30. Examples of weak acids –
- a) CH₃COOH, H₂CO₃
 - b) HCl, HNO₃
 - c) H₂SO₄
 - d) HBr
31. Examples of strong bases –
- a) NaOH, KOH
 - b) NH₄OH, Mg(OH)₂
 - c) CaCO₃, BaSO₄
 - d) H₂O, NH₃
32. Examples of weak bases –
- a) NH₄OH, NH₃
 - b) NaOH, KOH
 - c) Ca(OH)₂
 - d) Ba(OH)₂
33. Acid-dissociation constant K_a =
- a) $\frac{[H^+][A^-]}{[HA]}$
 - b) $\frac{[HA]}{[H^+][A^-]}$
 - c) $\frac{[H^+]}{[HA]}$
 - d) $\frac{[A^-]}{[H^+]}$
34. Base-dissociation constant K_b =
- a) $\frac{[BH^+][OH^-]}{[B]}$
 - b) $\frac{[B]}{[BH^+][OH^-]}$
 - c) $\frac{[OH^-]}{[B]}$
 - d) $\frac{[B][OH^-]}{[BH^+]}$
35. For conjugate acid-base pair, $K_a \times K_b$ =
- a) K_w
 - b) $1/K_w$
 - c) K_w^2
 - d) K_a/K_b
36. For CH₃COOH and CH₃COO⁻, $K_a \times K_b$ =
- a) 1×10^{-14}

CLASS XI CHE CH: 6

- b) 1×10^7
c) 10^{-7}
d) None
37. The weaker the acid, the –
a) Smaller K_a and larger pK_a
b) Larger K_a and smaller pK_a
c) Larger K_a
d) None
38. Relation between pK_a and K_a –
a) $pK_a = -\log K_a$
b) $pK_a = \log K_a$
c) $K_a = -\log pK_a$
d) $pK_a = 1/K_a$
39. $pK_a + pK_b =$
a) $pK_w = 14$ (at 25°C)
b) 10
c) 7
d) 1
40. The pH of 0.01 M HCl =
a) 2
b) 1
c) 3
d) 4
41. The pH of 0.001 M NaOH =
a) 11
b) 12
c) 13
d) 14
42. Common ion effect is due to –
a) Decrease in ionisation by addition of common ion
b) Increase in ionisation
c) Formation of complex
d) None
43. Common ion effect suppresses –
a) Ionisation of weak electrolyte
b) Ionisation of strong electrolyte
c) Neutralisation
d) Hydrolysis
44. Solubility-product (K_{sp}) is applicable to –
a) Sparingly soluble salts
b) Strong electrolytes
c) Gases
d) Liquids
45. For $\text{AgCl} \rightleftharpoons \text{Ag}^+ + \text{Cl}^-$, $K_{sp} =$
a) $[\text{Ag}^+][\text{Cl}^-]$

CLASS XI CHE CH: 6

- b) $[\text{Ag}^+]/[\text{Cl}^-]$
c) $[\text{Ag}^+]^2$
d) $[\text{Cl}^-]^2$
46. If $Q_{sp} > K_{sp}$, precipitation –
a) Occurs
b) Does not occur
c) Stops
d) None
47. If $Q_{sp} < K_{sp}$, solution is –
a) Unsaturated
b) Saturated
c) Supersaturated
d) None
48. When $Q_{sp} = K_{sp}$, solution is –
a) Saturated and equilibrium exists
b) Unsaturated
c) Supersaturated
d) None
49. Buffer solution resists change in –
a) pH
b) Temperature
c) Pressure
d) Concentration
50. Henderson–Hasselbalch equation is –
a) $\text{pH} = \text{pK}_a + \log ([\text{salt}]/[\text{acid}])$
b) $\text{pH} = \text{pK}_a - \log ([\text{salt}]/[\text{acid}])$
c) $\text{pH} = \text{pK}_a + [\text{acid}]/[\text{salt}]$
d) $\text{pH} = \text{pK}_a - [\text{acid}]/[\text{salt}]$

Answer Key – SET 2

1–b 2–a 3–a 4–a 5–a 6–a 7–a 8–a 9–a 10–a
11–a 12–a 13–b 14–a 15–a 16–a 17–a 18–a 19–a 20–a
21–a 22–a 23–a 24–a 25–a 26–a 27–a 28–a 29–a 30–a
31–a 32–a 33–a 34–a 35–a 36–a 37–a 38–a 39–a 40–a
41–a 42–a 43–a 44–a 45–a 46–a 47–a 48–a 49–a 50–a