

CLASS XI CHE CH: 7

SET 1 – Redox Reactions (Basic Concepts)

1. The term "redox" stands for –
 - a) Reduction and oxidation
 - b) Reaction and oxidation
 - c) Reduction only
 - d) Oxidation only
2. In a redox reaction, oxidation involves –
 - a) Gain of electrons
 - b) Loss of electrons
 - c) Gain of protons
 - d) Loss of neutrons
3. Reduction involves –
 - a) Loss of electrons
 - b) Gain of electrons
 - c) Gain of oxygen
 - d) Loss of hydrogen
4. Which of the following is an oxidising agent?
 - a) Loses electrons
 - b) Gains electrons
 - c) Gets reduced
 - d) Both b and c
5. Which of the following is a reducing agent?
 - a) Gains electrons
 - b) Gets reduced
 - c) Loses electrons
 - d) Both b and c
6. In the reaction:
$$\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu},$$

the oxidising agent is –
 - a) Zn
 - b) Cu
 - c) Cu^{2+}
 - d) SO_4^{2-}
7. In the above reaction, the reducing agent is –
 - a) Cu^{2+}
 - b) Cu
 - c) Zn^{2+}
 - d) Zn
8. Oxidation number of oxygen in most compounds is –
 - a) +1
 - b) –1
 - c) –2
 - d) 0

CLASS XI CHE CH: 7

9. Oxidation number of hydrogen in H_2O is –
a) 0
b) +1
c) -1
d) +2
10. The oxidation number of chlorine in NaClO_3 is –
a) +1
b) +3
c) +5
d) +7
11. Oxidation number of S in H_2SO_4 is –
a) +2
b) +4
c) +6
d) 0
12. Oxidation number of Mn in KMnO_4 is –
a) +2
b) +4
c) +6
d) +7
13. Oxidation number of Cr in $\text{K}_2\text{Cr}_2\text{O}_7$ is –
a) +2
b) +3
c) +6
d) +7
14. Oxidation number of Fe in FeCl_3 is –
a) +1
b) +2
c) +3
d) +4
15. In H_2O_2 , oxidation number of oxygen is –
a) -2
b) -1
c) 0
d) +1
16. Oxidation number of nitrogen in NH_3 is –
a) +3
b) 0
c) -3
d) +5
17. In NO_2 , oxidation number of nitrogen is –
a) +2
b) +3
c) +4
d) +5

CLASS XI CHE CH: 7

18. In HNO_3 , oxidation number of N is –
a) +2
b) +3
c) +5
d) +4
19. Oxidation number of chlorine in Cl_2O_7 is –
a) +1
b) +3
c) +5
d) +7
20. Oxidation number of phosphorus in H_3PO_4 is –
a) +3
b) +5
c) +1
d) 0
21. In which compound does nitrogen have oxidation number +4?
a) N_2O
b) NO
c) NO_2
d) N_2
22. Which element always has zero oxidation number in its elemental form?
a) O
b) Cl
c) H
d) All of these
23. Oxidation number of oxygen in OF_2 is –
a) 0
b) –2
c) +2
d) +1
24. The oxidation number of S in $\text{Na}_2\text{S}_2\text{O}_3$ (thiosulphate) is –
a) +2
b) +2.5
c) +6
d) +3
25. Oxidation number of N in hydrazine (N_2H_4) is –
a) 0
b) –2
c) –1
d) +1
26. Which is both oxidising and reducing agent?
a) H_2O
b) H_2O_2
c) H_2SO_4
d) KMnO_4

CLASS XI CHE CH: 7

27. In disproportionation reaction –
- One element is oxidised only
 - One element is reduced only
 - One element is both oxidised and reduced
 - Two elements are oxidised
28. Example of disproportionation reaction is –
- $2\text{H}_2\text{O}_2 \rightarrow 2\text{H}_2\text{O} + \text{O}_2$
 - $\text{Zn} + \text{Cu}^{2+} \rightarrow \text{Zn}^{2+} + \text{Cu}$
 - $\text{Cu} + 2\text{Ag}^+ \rightarrow \text{Cu}^{2+} + 2\text{Ag}$
 - $\text{H}_2 + \text{Cl}_2 \rightarrow 2\text{HCl}$
29. Which compound shows variable oxidation states?
- Sodium
 - Potassium
 - Iron
 - Calcium
30. Change in oxidation number represents –
- Acid-base reaction
 - Oxidation-reduction reaction
 - Displacement reaction only
 - Combination reaction only
31. In redox reactions, the oxidising agent –
- Is oxidised
 - Is reduced
 - Gains electrons
 - Both b and c
32. Reducing agent –
- Gains electrons
 - Loses electrons
 - Is reduced
 - Both a and c
33. When $\text{Fe}^{2+} \rightarrow \text{Fe}^{3+}$, it means –
- Reduction
 - Oxidation
 - Both
 - None
34. When $\text{Cl}_2 \rightarrow 2\text{Cl}^-$, it means –
- Oxidation
 - Reduction
 - Disproportionation
 - None
35. Which reaction is redox?
- $\text{H}_2 + \text{Cl}_2 \rightarrow 2\text{HCl}$
 - $\text{H}_2\text{O} + \text{H}_2\text{SO}_4 \rightarrow \text{H}_3\text{O}^+ + \text{HSO}_4^-$
 - $\text{NaCl} + \text{AgNO}_3 \rightarrow \text{AgCl} + \text{NaNO}_3$
 - $\text{CuSO}_4 + \text{Zn} \rightarrow \text{Cu} + \text{ZnSO}_4$

CLASS XI CHE CH: 7

36. Oxidation number method is used for –
- Determining oxidation state
 - Balancing redox equations
 - Identifying acidic medium
 - Measuring pH
37. Which is not a redox reaction?
- Neutralisation
 - Combination
 - Displacement
 - Decomposition
38. Oxidation number of carbon in CO_2 is –
- 0
 - +2
 - +4
 - +1
39. Oxidation number of carbon in CH_4 is –
- 0
 - 4
 - +4
 - +2
40. Oxidation number of carbon in CO is –
- 0
 - +2
 - +4
 - 2
41. Oxidation number of chlorine in ClO^- is –
- +1
 - +3
 - +5
 - +7
42. Oxidation number of chlorine in ClO_2^- is –
- +1
 - +3
 - +5
 - +7
43. Oxidation number of chlorine in ClO_3^- is –
- +1
 - +3
 - +5
 - +7
44. Oxidation number of chlorine in ClO_4^- is –
- +1
 - +3
 - +5
 - +7

CLASS XI CHE CH: 7

45. Which reaction involves oxidation of chlorine?
a) $\text{Cl}_2 + 2\text{NaOH (cold)} \rightarrow \text{NaCl} + \text{NaOCl} + \text{H}_2\text{O}$
b) $\text{Cl}_2 + 2\text{NaOH (hot)} \rightarrow \text{NaCl} + \text{NaClO}_3 + \text{H}_2\text{O}$
c) Both (a) and (b)
d) None
46. In the reaction
 $\text{Cu} + 2\text{AgNO}_3 \rightarrow \text{Cu(NO}_3)_2 + 2\text{Ag}$,
oxidising agent is –
a) Cu
b) Ag^+
c) NO_3^-
d) AgNO_3
47. Reducing agent in the above reaction is –
a) Cu
b) Ag^+
c) NO_3^-
d) Ag
48. Oxidation number of Mn in MnO_2 is –
a) +2
b) +3
c) +4
d) +7
49. $\text{MnO}_4^- \rightarrow \text{Mn}^{2+}$ involves –
a) Oxidation
b) Reduction
c) Disproportionation
d) None
50. In which of the following, oxidation number of an element increases?
a) Reduction
b) Oxidation
c) Both
d) None

ANSWERS:

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