



DPP-2 (OXIDISING & REDUCING AGENTS)

Chapter: Redox Reactions

“Doing something is better than doing nothing perfectly.”

GROUP-1 : Basic Definitions & Fundamentals

Q1. A reducing agent is a substance which can:

- (1) Accept electrons
- (2) Donate electrons
- (3) Accept protons
- (4) Donate protons

Q2. If an element is in its lowest oxidation state, under proper conditions it can act as:

- (1) Reducing agent
- (2) An oxidising agent
- (3) Oxidising as well as reducing agent
- (4) Neither oxidising nor reducing agent

Q3. In the course of a chemical reaction an oxidant –

- (1) Loses electron
- (2) Gains electron
- (3) Both loses and gains electrons
- (4) Electron change does not occur

Q4. When H_2 reacts with Na, it acts as:

- (1) Oxidising agent
- (2) Reducing agent
- (3) Both
- (4) Cannot be predicted

Q5. In a reaction between zinc and iodine, zinc iodide is formed. What is being oxidised?

- (1) Zinc ions
- (2) Iodide ions
- (3) Zinc atom
- (4) Iodine

GROUP-2 : Identification of Oxidant / Reductant

Q6. The reaction $H_2S + H_2O_2 \rightarrow S + 2H_2O$ manifests:

- (1) Oxidising action of H_2O_2
- (2) Reducing nature of H_2O_2
- (3) Acidic nature of H_2O_2
- (4) Alkaline nature of H_2O_2

- Q7. In a reaction of H_2O (steam) + C (glowing) $\rightarrow \text{CO} + \text{H}_2$:**
- (1) H_2O is the reducing agent
 - (2) H_2O is the oxidising agent
 - (3) Carbon is the oxidising agent
 - (4) Oxidation–reduction does not occur
- Q8. In the reaction: $\text{C} + 4\text{HNO}_3 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O} + 4\text{NO}_2$ HNO_3 acts as:**
- (1) An oxidising agent
 - (2) An acid
 - (3) A reducing agent
 - (4) A base
- Q9. Hot concentrated sulphuric acid is a moderately strong oxidizing agent. Which of the following reactions does not show oxidizing behaviour?**
- (1) $\text{C} + 2\text{H}_2\text{SO}_4 \rightarrow \text{CO}_2 + 2\text{SO}_2 + 2\text{H}_2\text{O}$
 - (2) $\text{CaF}_2 + 2\text{H}_2\text{SO}_4 \rightarrow \text{CaSO}_4 + 2\text{HF}$
 - (3) $\text{Cu} + 2\text{H}_2\text{SO}_4 \rightarrow \text{CuSO}_4 + \text{SO}_2 + 2\text{H}_2\text{O}$
 - (4) $3\text{S} + 2\text{H}_2\text{SO}_4 \rightarrow 3\text{SO}_2 + 2\text{H}_2\text{O}$
- Q10. In which of the following reaction hydrogen is acting as an oxidising agent:**
- (1) With iodine to give hydrogen iodide
 - (2) With lithium to give lithium hydride
 - (3) With nitrogen to give ammonia
 - (4) With sulphur to give hydrogen sulphide
- Q11. In the following reaction $2\text{FeCl}_3 + \text{H}_2\text{S} \rightarrow 2\text{FeCl}_2 + 2\text{HCl} + \text{S}$**
- (1) FeCl_3 is oxidant
 - (2) FeCl_3 & H_2S are oxidised
 - (3) FeCl_3 is oxidised & H_2S is reduced
 - (4) H_2S is oxidant
- Q12. The reducing agent in the given reaction is $\text{Fe}_2\text{O}_3 + 2\text{Al} \rightarrow \text{Al}_2\text{O}_3 + 2\text{Fe}$**
- (1) Fe_2O_3
 - (2) Al
 - (3) Al_2O_3
 - (4) Fe
- Q13. The oxidant in the given reaction is $2\text{FeCl}_3(\text{aq}) + \text{H}_2(\text{g}) \rightarrow 2\text{FeCl}_2(\text{aq}) + 2\text{HCl}(\text{aq})$**
- (1) H_2
 - (2) FeCl_3
 - (3) FeCl_2
 - (4) HCl

GROUP–3 : Hydrogen Peroxide (Dual Nature)

- Q14. The compound that can work both as an oxidising as well as reducing agent is:**
- (1) KMnO_4
 - (2) H_2O_2
 - (3) $\text{Fe}_2(\text{SO}_4)_3$
 - (4) $\text{K}_2\text{Cr}_2\text{O}_7$

- Q15. Reaction (A) $S^{2-} + 4H_2O_2 \rightarrow SO_4^{2-} + 4H_2O$ (B) $Cl_2 + H_2O_2 \rightarrow 2HCl + O_2$ The true statement regarding above reactions is:**
- (1) H_2O_2 acts as reductant in both
 - (2) H_2O_2 acts as oxidant in (A) and reductant in (B)
 - (3) H_2O_2 acts as oxidant in both
 - (4) H_2O_2 acts as reductant in (A) and oxidant in (B)
- Q16. In which of the following reactions H_2O_2 acts as reducing agent:**
- (1) $2FeCl_2 + 2HCl + H_2O_2 \rightarrow 2FeCl_3 + 2H_2O$
 - (2) $Cl_2 + H_2O_2 \rightarrow 2HCl + O_2$
 - (3) $2HI + H_2O_2 \rightarrow 2H_2O + I_2$
 - (4) $H_2SO_3 + H_2O_2 \rightarrow H_2SO_4 + H_2O$
- Q17. Role of hydrogen peroxide in the above reactions is respectively: (a) $H_2O_2 + O_3 \rightarrow H_2O + 2O_2$ (b) $H_2O_2 + Ag_2O \rightarrow 2Ag + H_2O + O_2$**
- (1) Oxidizing in (a) and reducing in (b)
 - (2) Reducing in (a) and oxidizing in (b)
 - (3) Reducing in (a) and (b)
 - (4) Oxidizing in (a) and (b)
- Q18. In which of the following reaction H_2O_2 acts as a reducing agent?**
- (1) $H_2O_2 + 2H^+ + 2e^- \rightarrow 2H_2O$
 - (2) $H_2O_2 \rightarrow 2OH^- + O_2$
 - (3) $H_2O_2 + 2e^- \rightarrow 2OH^-$
 - (4) $H_2O_2 + 2H^+ + 2e^- \rightarrow O_2 + 2H_2O$
- Q19. Which of the following act both as oxidant & reductant:-**
- (1) H_2S
 - (2) SO_3
 - (3) H_2O_2
 - (4) F_2

GROUP-4 : Oxidation Number, Disproportionation & Advanced

- Q20. Oxidation numbers of A, B, C are +2, +5 and -2 respectively. Possible formula of compound is:**
- (1) $A_2(BC_2)_2$
 - (2) $A_3(BC_4)_2$
 - (3) $A_2(BC_3)_2$
 - (4) $A_3(B_4C)_2$
- Q21. Which is the best description of the behaviour of bromine in the reaction below:-
 $H_2O + Br_2 \rightarrow HOBr + HBr$**
- (1) Both oxidized and reduced
 - (2) Oxidized only
 - (3) Reduced only
 - (4) Proton acceptor only
- Q22. In the following equation $2Br_2 + 6CO_3^{2-} + 3H_2O \rightarrow 5Br^- + BrO_3^- + 6HCO_3^-$**
- (1) Bromine is oxidised and carbonate is reduced

- (2) Bromine is reduced and carbonate is oxidised
- (3) Bromine is neither reduced nor oxidised
- (4) Bromine is reduced as well oxidised

Q23. In reaction $\text{Cl}_2 + \text{IO}_3^- \xrightarrow{\text{OH}^-} \text{IO}_4^- + 2\text{Cl}^-$ the oxidising and reducing agent respectively are:

- (1) Cl^- , IO_3^-
- (2) Cl_2 , IO_3^-
- (3) Cl^- , IO_4^-
- (4) Cl_2 , IO_4^-

Q24. Which change requires an oxidising agent?

- (1) $2\text{S}_2\text{O}_3^{2-} \rightarrow \text{S}_4\text{O}_6^{2-}$
- (2) $\text{Zn}^{2+} \rightarrow \text{Zn}$
- (3) $\text{ClO}^- \rightarrow \text{Cl}^-$
- (4) $\text{SO}_3 \rightarrow \text{SO}_4^{2-}$

Q25. In the reaction $8\text{Al} + 3\text{Fe}_3\text{O}_4 \rightarrow 4\text{Al}_2\text{O}_3 + 9\text{Fe}$, the number of electrons transferred from reductant to oxidant is:

- (1) 8
- (2) 4
- (3) 16
- (4) 24

Q26. Given the following reactions involving A, B, C and D: (i) $\text{C} + \text{B}^+ \rightarrow \text{C}^+ + \text{B}$ (ii) $\text{A}^+ + \text{D} \rightarrow \text{No reaction}$ (iii) $\text{C}^+ + \text{A} \rightarrow \text{No reaction}$ (iv) $\text{D} + \text{B}^+ \rightarrow \text{D}^+ + \text{B}$ The correct arrangement of A, B, C, D in order of their decreasing ability as reducing agent is:

- (1) $\text{D} > \text{B} > \text{C} > \text{A}$
- (2) $\text{A} > \text{C} > \text{D} > \text{B}$
- (3) $\text{C} > \text{A} > \text{B} > \text{D}$
- (4) $\text{C} > \text{A} > \text{D} > \text{B}$