

SHORT ANSWER QUESTIONS

Q.1. What do you mean by oxidation ?

Ans. Oxidation means loss of electrons by an atom or a group of atoms.

Q.2. What is reduction ?

Ans. Reduction is gain of electrons by an atom or group of atoms.

Q.3. Define oxidation number of an element.

Ans. Oxidation number is the combining capacity of an element in a compound. It is charge which an atom of the element appears to have when the electrons on the atom are counted keeping in view its electronegativity relative to other atoms.

Q.4. What is the difference between valency and oxidation number ?

Ans. Valency is the maximum number of electrons an atom can lose or gain whereas oxidation number is the actual number of electrons which the element lose or gain to form a molecule.

Q.5. What is redox reaction ?

Ans. A redox reaction is which involves both oxidation and reduction reactions.

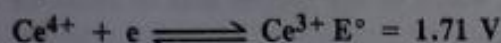
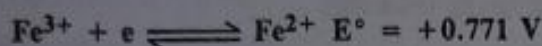
Q.6. In the reaction,



label the oxidising and reducing agent.

Ans. Oxidising agent : HgCl_2 ; Reducing agent : SnCl_2 .

Q.7. From the half cell reactions :



predict whether Ce^{4+} will act as an oxidising agent or reducing agent in the overall reaction.

Ans. Ce^{4+} will act an oxidising agent due to its higher reduction potential in comparison to $\text{Fe}^{3+}/\text{Fe}^{2+}$ exchange reaction.

Q.8. In the reaction :



Predict the oxidant and reductant.

Ans. MnO_2 : Oxidant; Al : Reductant

Q.9. What are anode and cathode in a cell ?

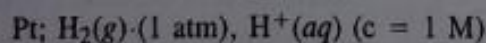
Ans. The electrode at which oxidation occurs is called anode whereas electrode at which reduction occurs is called cathode.

Q.10. Define electrode potential.

Ans. The tendency of an electrode to lose or gain electrons when it is in contact with its own ions in solution is called electrode potential.

Q.11. Represent a standard hydrogen electrode.

Ans. Standard hydrogen electrode is represented as :



Q.12. What do you mean by reduction potential and oxidation potential ?

Ans. The tendency to get reduced is called reduction potential whereas tendency to lose electrons is called oxidation potential.

Q.13. What is electrochemical series ?

Ans. The arrangement of standard reversible electrode potentials in their decreasing order of values is called the electrochemical series.

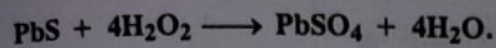
Q.14. What is Redox couple ?

Ans. Redox couples are the oxidised and reduced species involved in a half-cell reaction such as Cu^{2+} , Cu.

Q.15. The E° values for Zn^{2+}/Zn is -0.76 V (-ve), while for Cu^{2+}/Cu is 0.34 V (+ve). Explain. Why the E° value is -ve for Zn^{2+}/Zn and +ve for Cu^{2+}/Cu ?

Ans. When copper electrode is connected to standard hydrogen electrode, reduction takes place at copper electrode so E° value for Cu^{2+}/Cu is +ve. When zinc electrode is connected with S.H.E., oxidation takes place so E° value for Zn^{2+}/Zn is -ve.

Q.16. Indicate reducing agent and species reduced in the following reaction :



Ans. PbS is reducing agent and H_2O_2 is reduced.

Q.17. Define an indicator.

Ans. The chemical reagent which helps in the visual detection by a colour change at the completion of the titration is called an indicator.