



CHEMISTRY

BOOKS - KUMAR PRAKASHAN KENDRA CHEMISTRY (GUJRATI ENGLISH)

REDOX REACTIONS

Section A Question

1. What is redox reaction ? Explain its uses.

 [Watch Video Solution](#)

2. What is oxidation reaction ? Explain it with example.

 [Watch Video Solution](#)

3. What is reduction reaction ? Give its examples.

 [Watch Video Solution](#)

4. What is oxidising agent and reducing agent ? Explain with examples.

 [Watch Video Solution](#)

5. Give reaction when Zn rod kept in copper nitrate solution ?

 [View Text Solution](#)

6. Give reaction when a Cu rod is kept in $AgNO_3$ solution.

 [Watch Video Solution](#)

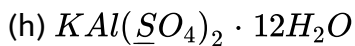
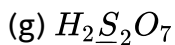
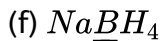
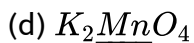
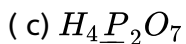
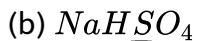
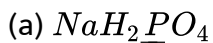
7. What is oxidation number?

 [View Text Solution](#)

8. Give the rules for the calculation of oxidation number.

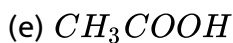
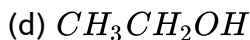
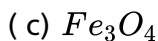
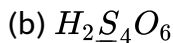
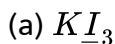
 [View Text Solution](#)

9. Assign oxidation number to the underlined elements in each of the following species :



 [View Text Solution](#)

10. What are the oxidation number of the underlined elements in each of the following and how do you rationalize your results ?



 [View Text Solution](#)

11. Calculate the oxidation number of sulphur, chromium and nitrogen in H_2SO_5 , $Cr_2O_7^{2-}$ and NO_3^- . Suggest structure of these compounds. Count for the fallacy.

 [View Text Solution](#)

12. Suggest a list of the substances where carbon can exhibit oxidation states from -4 to +4 and nitrogen from -3 to +5.



[View Text Solution](#)

13. Consider the elements :

Cs, Ne, I and F

(a) Identify the element that exhibits only negative oxidation state.

(b) Identify the element that exhibits only positive oxidation state.

(c) Identify the element that exhibits both positive and negative oxidation states.

(d) Identify the element which exhibits neither the negative nor does the positive oxidation state.



[Watch Video Solution](#)

14. Explain stock notation theory with example.



[Watch Video Solution](#)

15. Write formulas for the following compounds :

(a) Mercury (II) chloride

(b) Nickel (II) sulphate

(c) Tin (IV) oxide

(d) Thallium (I) sulphate

(e) Iron (III) sulphate

(f) Chromium (III) oxide



[Watch Video Solution](#)

16. Sulphur dioxide and hydrogen peroxide can act as an oxidising as well as a reducing agents in their reactions, while ozone and nitric acid act only as an oxidants. Why?



[View Text Solution](#)

17. Whenever a reaction between an oxidising agent and a reducing agent is carried out, a compound of lower oxidation state is formed if the

reducing agent is in excess and a compound of higher oxidation state is formed if the oxidising agent is in excess. Justify this statement giving three illustrations.

 [View Text Solution](#)

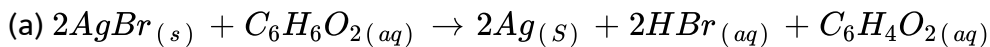
18. How do you count for the following observations ?

(a) Though alkaline potassium permanganate and acidic potassium permanganate both are used as oxidants, yet in the manufacture of benzoic acid from toluene we use alcoholic potassium permanganate as an oxidant. Why ? Write a balanced redox equation for the reaction.

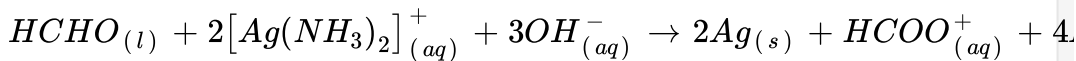
(b) When concentrated sulphuric acid is added to an inorganic mixture containing chloride, we get colourless pungent smelling gas HCl, but if the mixture contains bromide then we get red vapour of bromine. Why?

 [View Text Solution](#)

19. Identify the substance oxidised reduced, oxidising agent and reducing agent for each of the following reactions :

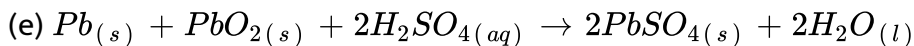
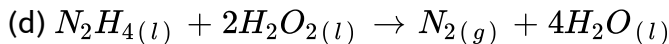
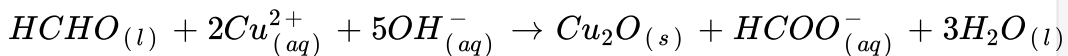


(b)



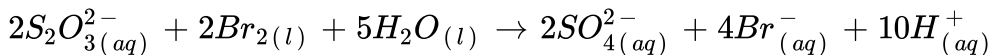
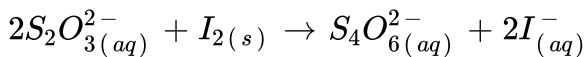
(

c)



[View Text Solution](#)

20. Consider the reactions :



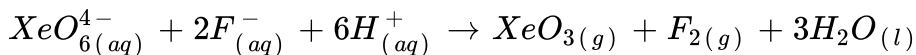
[View Text Solution](#)

21. Justify giving reactions that among halogens, fluorine is the best oxidant and among hydrohalic compounds, hydroiodic acid is the best reductant.



[View Text Solution](#)

22. Why does the following reaction occur ?



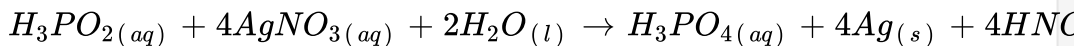
What conclusion about the compound Na_4XeO_6 (of which XeO_6^{4-} is a part) can be drawn from the reaction ?



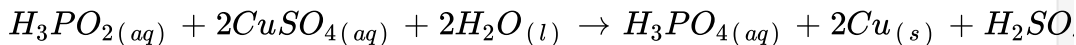
[View Text Solution](#)

23. Consider the reactions :

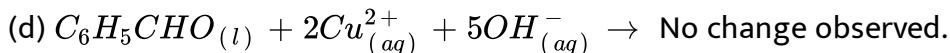
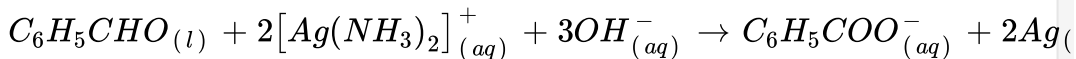
(a)



(b)



(c)



What inference do you draw about the behaviour of Ag^+ and Cu^{2+} from these reactions ?

 [View Text Solution](#)

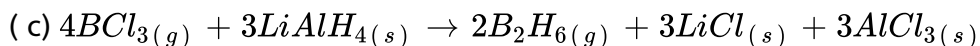
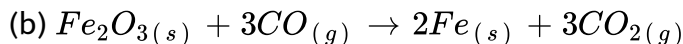
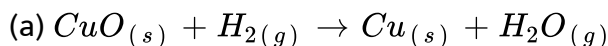
24. Give information of oxidation numbers of elements present in periodic table ?

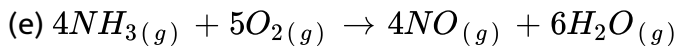
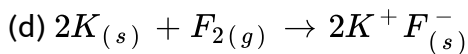
 [View Text Solution](#)

25. Discuss the types of redox reactions in detail ?

 [View Text Solution](#)

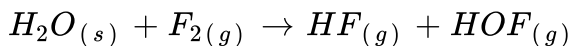
26. Justify that the following reactions are redox reactions :





 [View Text Solution](#)

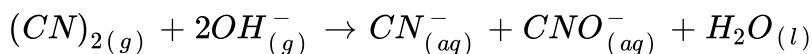
27. Fluorine reacts with ice and results in the change :



Justify that this reaction is a redox reaction.

 [Watch Video Solution](#)

28. What sorts of informations can you draw from the following reaction ?



 [Watch Video Solution](#)

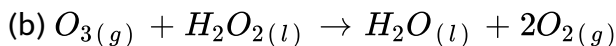
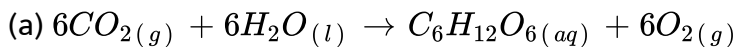
29. Refer to the periodic table given in your book and now answer the following questions :

(a) Select the possible non metals that can show disproportionation reaction.

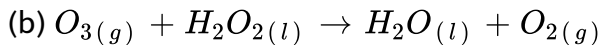
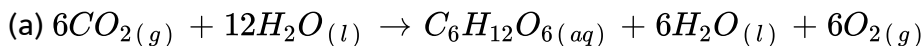
(b) Select three metals that can show disproportionation reaction.

 [View Text Solution](#)

30. Consider the reactions :



Why it is more appropriate to write these reactions as :



Also suggest a technique to investigate the path of the above (a) and (b) redox reactions.

 [View Text Solution](#)

31. The compound AgF_2 is unstable compound. However, if formed, the compound acts as a very strong oxidising agent. Why?

 [Watch Video Solution](#)

32. Explain balancing of redox reaction by oxidation number method.

 [View Text Solution](#)

33. Explain balancing of redox reaction by half reaction method with suitable example.

 [View Text Solution](#)

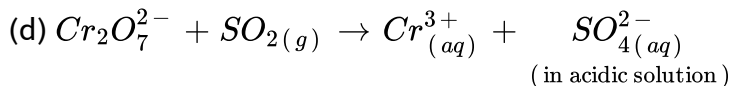
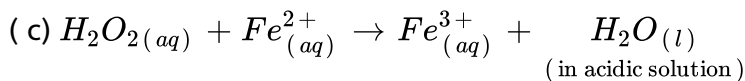
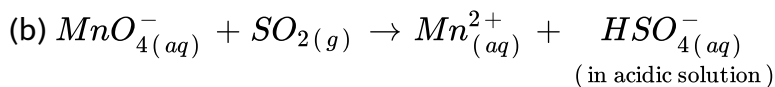
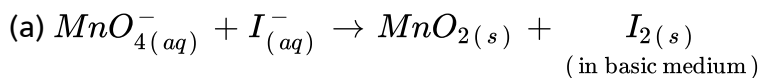
34. Fe^{+2} in acidic medium is convert $Cr_2O_7^{-2}$ ion into Cr^{+3} ion by reduction Fe^{+3} is obtained balance these redox reaction with equation.

 [View Text Solution](#)

35. The Mn^{3+} ion is unstable in solution and undergoes disproportionation to give Mn^{2+} , MnO_2 , and H^+ ion. Write a balanced ionic equation for the reaction.

 [View Text Solution](#)

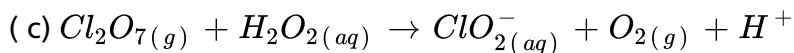
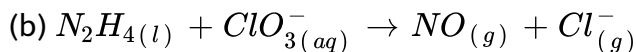
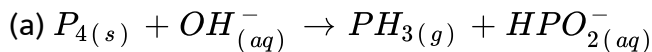
36. Balance the following redox reactions by ion electron method :



 [View Text Solution](#)

37. Balance the following equations in basic medium by ion-electron method and oxidation number methods and identify the oxidising agent

and the reducing agent.



 [View Text Solution](#)

38. Chlorine is used to purify drinking water. Excess of chlorine is harmful.

The excess of chlorine is removed by treating with sulphur dioxide.

Present a balanced equation for this redox change taking place in water.

 [View Text Solution](#)

39. Explain uses of indicator in analysis of redox reaction.

 [View Text Solution](#)

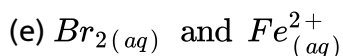
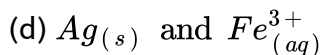
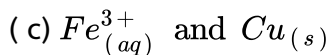
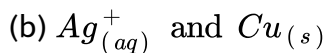
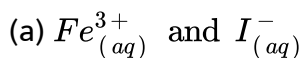
40. Explain redox reaction of electrodes with example of Daniell cell.

 [View Text Solution](#)

41. In Ostwald's process for the manufacture of nitric acid, the first step involves the oxidation of ammonia gas by oxygen gas to give nitric oxide gas and steam. What is the maximum weight of nitric oxide that can be obtained starting only with 10.00 g. of ammonia and 20.00 g of oxygen ?

 [View Text Solution](#)

42. Using the standard electrode potentials given in the Table-8.1, predict if the reaction between the following is feasible :



 [View Text Solution](#)

43. Predict the products of electrolysis in each of the following:

(i) An aqueous solution of $AgNO_3$ with silver electrodes.

(ii) An aqueous solution $AgNO_3$ with platinum electrodes.

(iii) A dilute solution of H_2SO_4 with platinum electrodes.

(iv) An aqueous solution of $CuCl_2$ with platinum electrodes.



[View Text Solution](#)

44. Arrange the following metals in the order in which they displace each other from the solution of their salts. Al, Cu, Fe, Mg and Zn.



[Watch Video Solution](#)

45. Given the standard electrode potentials,

$$K^+ / K = - 2.93V, Ag^+ / Ag = 0.80V$$

$$Hg^{2+} / Hg = 0.79V$$

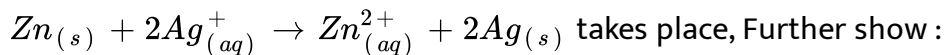
$$Mg^{2+} / Mg = - 2.37V, Cr^{3+} / Cr = - 0.74V$$

arrange these metals in their increasing order of reducing power.



[View Text Solution](#)

46. Depict the galvanic cell in which the reaction



- (i) Which of the electrode is negatively charged,
- (ii) The carriers of the current in the cell, and
- (iii) Individual reaction at each electrode.



[Watch Video Solution](#)

Section A Try Your Self

1. From the given potential identify metal which can completely dissociate from all solutions.

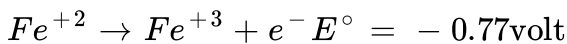
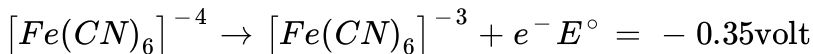
$$E^\circ Zn^{+2} / Zn = - 0.76\text{volt}, E^\circ Cu^{+2} / Cu = + 0.34\text{volt}$$

$$E^\circ Ag^+ / Ag = + 0.80\text{volt}, E^\circ Co^{+2} / Co = - 0.28\text{volt}$$



[View Text Solution](#)

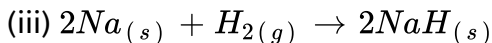
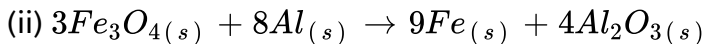
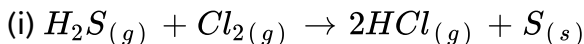
2. From the given values which one is strong oxidising agent ?



[View Text Solution](#)

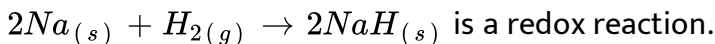
Section A Questions

1. In the reactions given below, identify the species undergoing oxidation and reduction :



[View Text Solution](#)

2. Justify that the reaction :





[Watch Video Solution](#)

3. Using Stock notation, represent the following compounds :

$HAuCl_4$, Tl_2O , FeO , Fe_2O_3 , CuI , CuO , MnO and MnO_2



[View Text Solution](#)

4. Justify that the reaction :

$2Cu_2O_{(s)} + Cu_2S_{(s)} \rightarrow 6Cu_{(s)} + SO_{2(g)}$ is a redox reaction.

Identify the species oxidised/reduced, which acts as an oxidant and which acts as a reductant.



[Watch Video Solution](#)

5. Which of the following species, do not show disproportionation reaction and why?

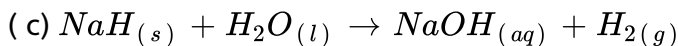
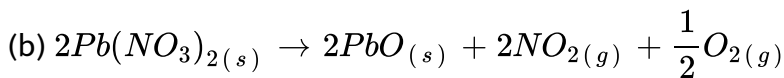
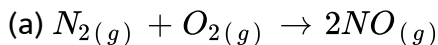
ClO^- , ClO_2^- , ClO_3^- and ClO_4^-

Also write reaction for each of the species that disproportionates.



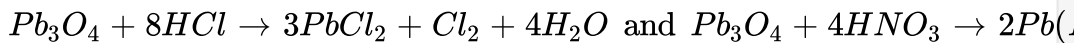
[View Text Solution](#)

6. Suggest a scheme of classification of the following redox reactions.



[View Text Solution](#)

7. Why do the following reactions proceed differently?



[View Text Solution](#)

8. Write the net ionic equation for the reaction of potassium dichromate (VI), $K_2Cr_2O_7$ with sodium sulphite, Na_2SO_3 , in an acid solution to give chromium (III) ion and the sulphate ion.



[View Text Solution](#)

9. Permanganate ion reacts with bromide ion in basic medium to give manganese dioxide and bromate ion. Write the balanced ionic equation for the reaction.



[View Text Solution](#)

10. Permanganate (VII) ion, MnO_4^- in basic solution oxidises iodide ion, I^- to produce molecular iodine (I_2) and manganese (IV) oxide (MnO_2). Write a balanced ionic equation to represent this redox reaction.



[View Text Solution](#)

Section B Short Questions

1. What is oxidising agent ?



 [Watch Video Solution](#)

2. What is reducing agent ?

 [Watch Video Solution](#)

3. Which metals follows stock notation method ?

 [View Text Solution](#)

4. What is name of $K_2Cr_2O_7$ according to stock notation method ?

 [Watch Video Solution](#)

5. What is oxidation number of S in H_2SO_5 ?

 [View Text Solution](#)

6. Give reaction when a Cu rod is kept in $AgNO_3$ solution.

 [Watch Video Solution](#)

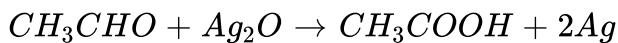
7. Write redox reaction when zinc rod is kept in H_2SO_4 solution.

 [Watch Video Solution](#)

8. What is oxidation number of .C. in $HClO_4$ and $HClO_3$?

 [Watch Video Solution](#)

9. In following reaction which is reducing agent substance ?

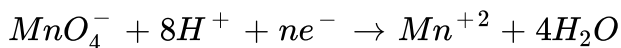


 [Watch Video Solution](#)

10. What is oxidation number of .C. in C_3O_2 ?

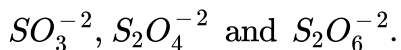
 [Watch Video Solution](#)

11. Calculate value of .n. in given reaction.



 [Watch Video Solution](#)

12. Arrange increasing order of oxidation number of S in molecules



 [Watch Video Solution](#)

13. What is oxidation number of Pt in $[Pt(C_2H_4)Cl_4]^-$?

 [Watch Video Solution](#)

14. Write name of Cr_2O_3 according to stock notation.

 [Watch Video Solution](#)

15. Write name of $Fe_2(SO_4)_3$ according to stock notation method.

 [Watch Video Solution](#)

16. What is the molecular formula of Marshall's acid ?

 [Watch Video Solution](#)

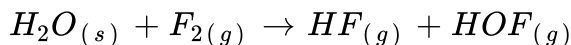
17. What is oxidation number of N in HNO_4 ?

 [Watch Video Solution](#)

18. What is oxidation number of Cl in bleaching powder ?

 [Watch Video Solution](#)

19. Prove that reaction between fluorine and ice is disproportionation reaction :



 [View Text Solution](#)

20. The compound AgF_2 is unstable compound. However, if formed, the compound acts as a very strong oxidising agent. Why?

 [Watch Video Solution](#)

21. Write stock notation name of Sn (IV) O_2 .

 [View Text Solution](#)

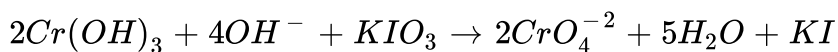
22. Which of the following element never shows disproportionation reaction ?

 [Watch Video Solution](#)

23. Write oxidation number of .C. in acetic acid.

 [Watch Video Solution](#)

24. Find out equivalent mass of KIO_3 in given reaction.



KIO_3 (Molecular Mass = M)

 [View Text Solution](#)

25. Calculate equivalent weight of $KMnO_4$ in Acidic, Basic and Neutral medium.

 [View Text Solution](#)

26. Write oxidation number of oxygen in KO_3 and Na_2O_2 .

 [Watch Video Solution](#)

27. Compound containing Xe and F having 63.8% of Xe then calculate oxidation number of Xe.

 [Watch Video Solution](#)

28. Calculate oxidation number of .C. in glucose.

 [Watch Video Solution](#)

29. Explain inter molecular redox reaction with example.

 [View Text Solution](#)

30. Calculate oxidation number of nitrogen and chlorine in $NOClO_4$.

 [Watch Video Solution](#)

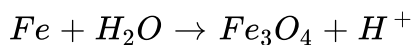
31. Calculate oxidation number of Fe in $Fe_{(0.94)}O$.

 [Watch Video Solution](#)

32. How many peroxide group present in CrO_2 ?

 [Watch Video Solution](#)

33. The number of electrons lost in the following change is :-



 [Watch Video Solution](#)

34. Calculate consecutive oxidation number of Br in Br_3O_8 .

 [Watch Video Solution](#)

35. Calculate oxidation number of oxygen in potassium ozonide.

 [Watch Video Solution](#)

36. Metal ion M^{+3} loses three electrons than what will be its oxidation number ?

 [View Text Solution](#)

37. Which method is used to produce nitric acid ?

 [Watch Video Solution](#)

38. How the ions transfer from solutions ?

 [View Text Solution](#)

39. What is standard electrode potential ?

 [View Text Solution](#)

40. Which solution is filled in salt bridge ?

 [View Text Solution](#)

41. What is value of standard hydrogen potential ?

 [View Text Solution](#)

42. What is redox couple ?



[View Text Solution](#)

43. Reduction potential value of A, B, C are 0.34V, -0.80V, -0.46V respectively then what will be order of strength of reducing agent ?



[View Text Solution](#)

44. Which metals are used as an anode and a cathode in Denial cell ?



[View Text Solution](#)

45. What is the work of salt bridge in Denial cell ?



[View Text Solution](#)

46. Oxidation potential of Zn, Cu, Ag are 0.76V, -0.34V, -0.80V, respectively then write down order of tendency of losing e^- .

 [View Text Solution](#)

Section B Match The Following

1. 

 [View Text Solution](#)

2. 

 [View Text Solution](#)

3. 

 [View Text Solution](#)

Section B Fill In The Blanks

1. Oxidation number of oxygen in potassium ozonide is ____

 [View Text Solution](#)

2. During this reaction $CN^- \rightarrow CNO^-$ ____ is added.

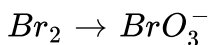
 [View Text Solution](#)

Section B State True Or False For The Following Statements

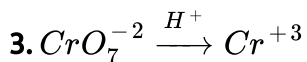
1. Oxidation number of .C. in methyl chloride is -3.

 [View Text Solution](#)

2. In following reaction oxidation number of Br is convert into 0 to -5 :

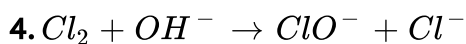


 [View Text Solution](#)



in this reaction equivalent mass of $Cr_2O_7^{2-}$ is $\frac{\text{molecular mass}}{6}$.

 [View Text Solution](#)



For this reaction select T(Ture) or F(False).

- (1) This reaction occurs in basic medium.
- (2) Oxidation and Reduction occurs for Cl_2 .
- (3) Products are obtained by disoication of Cl_2 .
- (4) In ClO^- oxidation number of Cl^- is (+1).

A. TFTF

B. FFTT

C. TFFT

D. TTFE

Answer: C



View Text Solution

Section B Assertion And Reason Type Questions

1. Statement : Concentration of $Zn_{(aq)}^{2+}$ increases cell potential increases (E_{cell}).

Reason : Concentration of $Zn_{(aq)}^{2+}$ increases with oxidation potential increases (E_{OX}).

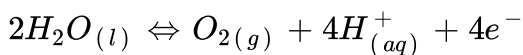
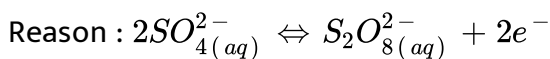
- A. Statement and reason both are correct and reason gives proper explanation of statement.
- B. Statement and reason both are right but reason is not explanation of statement.
- C. Statement is correct but reason is wrong.
- D. Statement is wrong but reason is correct.

Answer: D



View Text Solution

2. Statement : Oxygen has liberated on anode when electricity pass through aqueous solution of Na_2SO_4 in presence of it electrode.



standard potential of equation.

- A. Statement and reason both are correct and reason gives proper explanation of statement.
- B. Statement and reason both are right but reason is not explanation of statement.
- C. Statement is correct but reason is wrong.
- D. Statement is wrong but reason is correct.

Answer: A



[View Text Solution](#)

3. Statement : Water is added to electrolyte of aqueous solution then molar conductivity increases.

Reason : Dissociation of electrolytic substance decreases when electrolyte is added to aqueous solution.

- A. Statement and reason both are correct and reason gives proper explanation of statement.
- B. Statement and reason both are right but reason is not explanation of statement.
- C. Statement is correct but reason is wrong.
- D. Statement is wrong but reason is correct.

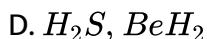
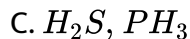
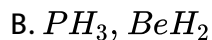
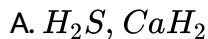
Answer: C



[View Text Solution](#)

Section C Multiple Choice Questions

1. From the following compounds H_2S , PH_3 , CaH_2 , BeH_2 which pair is having oxidation number same as hydrogen ?

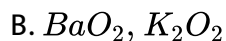
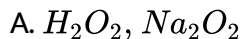


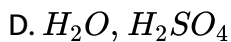
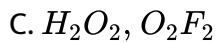
Answer: C



[View Text Solution](#)

2. From the following which pair is unfair ?



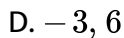
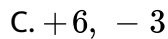
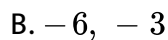
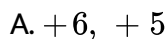


Answer: C



[View Text Solution](#)

3. What is oxidation number of Cr and N in $(\underline{N}H_4)_2\underline{C}rO_4$?

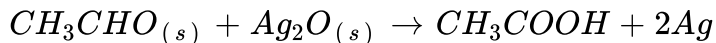


Answer: C



[View Text Solution](#)

4. Which compound is reducing agent in the following equation ?



A. CH_3COOH

B. Ag_2O

C. CH_3CHO

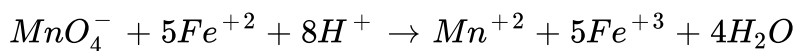
D. Ag

Answer: C



[View Text Solution](#)

5. From the following reaction which element's oxidation number is decreases ?



A. Mn

B. Fe

C. O

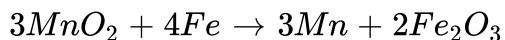
D. H_2

Answer: A



[View Text Solution](#)

6. From the following reaction which element's oxidation number is not change ?



A. Mn

B. Fe

C. O

D. Mn and Fe both

Answer: C



[View Text Solution](#)

7. Mention Na_2CrO_4 by stock notation method.

A. Sodium dichromate (VI)

B. Sodium chromate (VI)

C. Chromium (VI) oxide

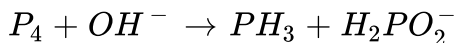
D. Sodium chromate (VI)

Answer: B



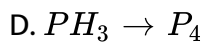
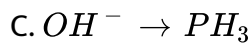
[View Text Solution](#)

8. Which is half reduction reaction in the following reaction (Basic medium).



A. $P_4 \rightarrow H_2PO_2^-$

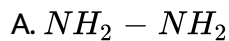
B. $P_4 \rightarrow PH_3$



Answer: B

 [View Text Solution](#)

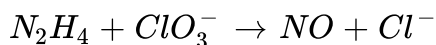
9. From the following which compound have -1 oxidation number of nitrogen ?



Answer: C

 [View Text Solution](#)

10. How many \bar{e} added in reduction half reaction of the following redox reaction in basic medium?



A. $8\bar{e}$

B. $6\bar{e}$

C. $5\bar{e}$

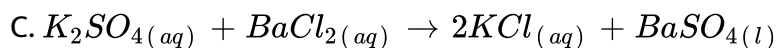
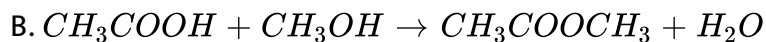
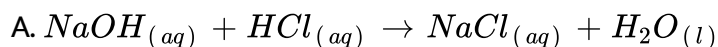
D. $4\bar{e}$

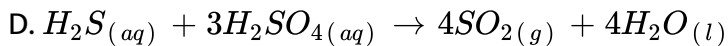
Answer: B



[View Text Solution](#)

11. From the following which reaction is redox reaction ?

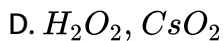
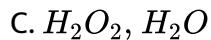
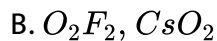
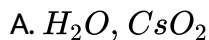
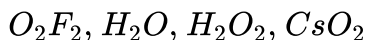




Answer: D

 [View Text Solution](#)

12. From the following compounds which two has oxidation number +1 and 0.5 of oxygen ?



Answer: B

 [View Text Solution](#)

13. What is oxidation number of N in $\underline{N}H_4\underline{N}O_3$ respectively ?

A. $-3, +3$

B. $+1, -1$

C. $-3, +5$

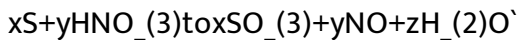
D. $+3, -5$

Answer: C



[View Text Solution](#)

14. What is the value of x, y, z from the following reactions ?



A. 3, 4, 2

B. 4, 3, 3

C. 2, 4, 3

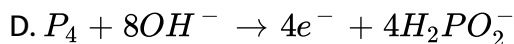
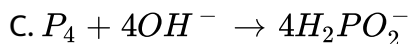
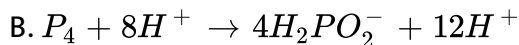
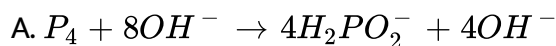
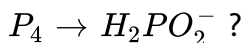
D. 2, 1, 3

Answer: A



[View Text Solution](#)

15. Which reaction is correct of oxidation half reaction in basic medium

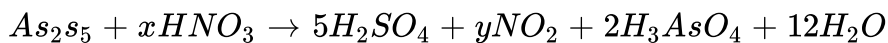


Answer: D



[View Text Solution](#)

16. From the redox reaction what is the value of x and y.



A. 40, 40

B. 10, 10

C. 20, 20

D. 30, 30

Answer: A



[View Text Solution](#)

17. N_2H_4 loses 10 mol e^- and form new compound Y number of N does not change so what is the oxidation number of N in Y atom ?

A. -1

B. -3

C. +3

D. +5

Answer: C

 [View Text Solution](#)

18. How many moles of $KMnO_4$ required to oxidised acidic medium of 1 mole $Fe(C_2O_4)$?

A. 0.6

B. 1.67

C. 0.2

D. 0.4

Answer: A

 [View Text Solution](#)

19. How many moles of $K_2Cr_2O_7$ is reduced by 1 mole Sn^{+2} ?

A. $\frac{1}{6}$

B. $\frac{1}{3}$

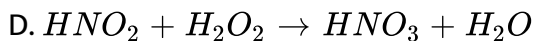
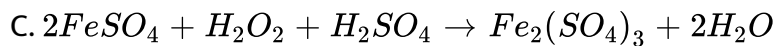
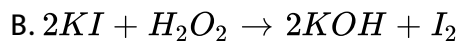
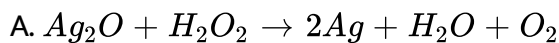
C. $\frac{2}{3}$

D. 1

Answer: B

 [View Text Solution](#)

20. From which reaction H_2O_2 act as reducing agent?



Answer: A

 [View Text Solution](#)

21. How many electrons required to received by oxidising agent $KMnO_4$ to converted into MnO_4^{-2} , MnO_2 , Mn_2O_3 and Mn^{+2} ?

A. 4, 3, 1, 5

B. 1, 5, 3, 7

C. 1, 3, 4, 5

D. 3, 5, 7, 1

Answer: C

 [View Text Solution](#)

22. Order of oxidation number of S in SO_3^{-2} , $S_2O_4^{-2}$ and $S_2O_6^{-2}$.

A. $S_2O_4^{-2} < SO_3^{-2} < S_2O_6^{-2}$

B. $SO_3^{-2} < S_2O_4^{-2} < S_2O_6^{-2}$

C. $S_2O_4^{-2} < S_2O_6^{-2} < SO_3^{-2}$

D. $S_2O_6^{-2} < S_2O_4^{-2} < SO_3^{-2}$

Answer: A

 [View Text Solution](#)

23. How many moles of $KMnO_4$ required to react with (SO_3^{-2}) sulphite ion in acidic medium?

A. 1

B. $\frac{1}{5}$

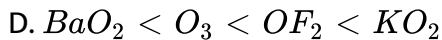
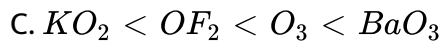
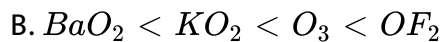
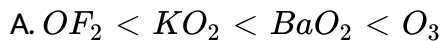
C. $\frac{2}{5}$

D. $\frac{3}{5}$

Answer: C

 [View Text Solution](#)

24. Arrange increasing order of oxidation number of oxygen.



Answer: B



View Text Solution

25. NH_2NH_2 compound loses 10 mole e^- and form new compound x then calculate oxidation number of N_2 in x compound.

(Here oxidation number of H does not change.)

A. -3

B. $+3$

C. -1

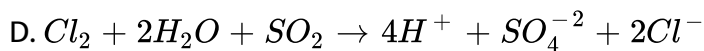
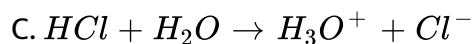
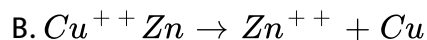
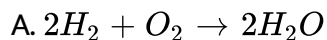
D. $+5$

Answer: B



View Text Solution

26. From the following which reaction is not redox reaction ?



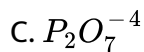
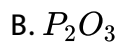
Answer: C



View Text Solution

27. Oxidation number of P of H_3PO_4 is similar with P of which compound

?



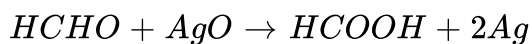
D. All of these

Answer: C



[View Text Solution](#)

28. From the following reaction which substance act as reducing agent ?



A. HCHO

B. Ag

C. HCOOH

D. Ag_2O

Answer: A

 [View Text Solution](#)

29. From the following which compound shows different oxidation number of H ?

$LiAlH_4$, $NaBH_4$, $NaHCO_3$, MgH_2

A. MgH_2

B. $NaHCO_3$

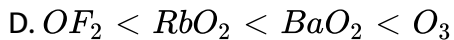
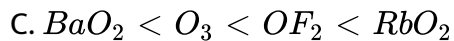
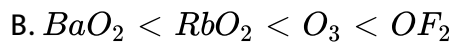
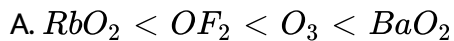
C. $LiAlH_4$

D. $NaBH_4$

Answer: B

 [View Text Solution](#)

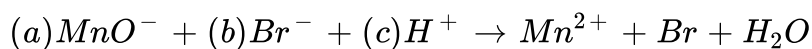
30. In which set from the following the oxidation number of oxygen is in increasing form ?



Answer: B

 [View Text Solution](#)

31. From following redox reaction co-efficient of (a), (b) and (c) are respectively ____



A. 2, 10, 16

B. 1, 5, 16

C. 2, 10, 8

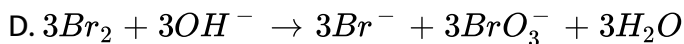
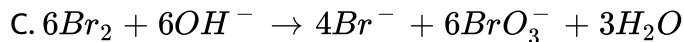
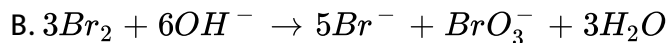
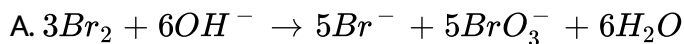
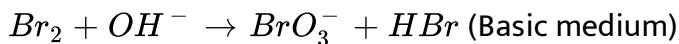
D. 16, 5, 1

Answer: A



View Text Solution

32. Balance the following redox equations.

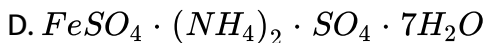
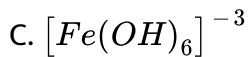
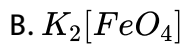
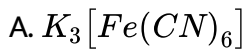


Answer: B



View Text Solution

33. From the following which compound has less oxidation state of Fe ?



Answer: D

 [View Text Solution](#)

34. When potassium permanganate acts as oxidising agent it is converted into MnO_4^{-2} , Mn_2O_3 , MnO_2 and Mn^{+2} then calculate change in electrons.

A. 4, 3, 1, 5

B. 1, 4, 3, 5

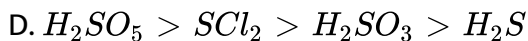
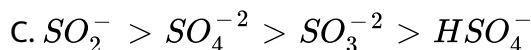
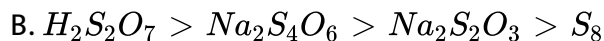
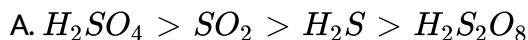
C. 3, 4, 1, 2

D. 3, 5, 1, 4

Answer: B

 [View Text Solution](#)

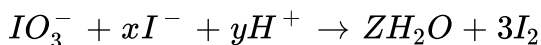
35. Arrange decreasing order of compounds for oxidation number of S..



Answer: B

 [View Text Solution](#)

36. Give value of x, y, z of given redox reaction



A. 5, 6, 3

B. 5, 3, 6

C. 5, 3, 3

D. 3, 5, 3

Answer: A

 [View Text Solution](#)

37. What is oxidation number of N in Li_3N ?

A. -2

B. -1

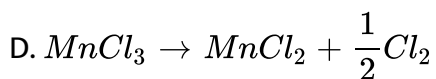
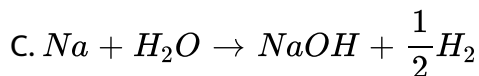
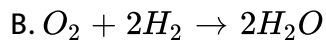
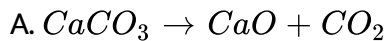
C. -3

D. +3

Answer: C

 [View Text Solution](#)

38. Which reaction is redox reaction ?

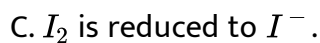
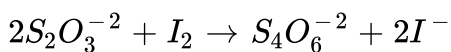


Answer: A



[View Text Solution](#)

39. From the following redox reaction,



D. I_2 is oxidised in I^- .

Answer: A::C



[View Text Solution](#)

40. The oxidation number of phosphorus in $Ba(H_2PO_2)$ is ____

A. +3

B. +2

C. +1

D. -1

Answer: C



[View Text Solution](#)

41. The oxidation state of chromium in $Cr(CO)_6$ is ____

A. 0

B. +2

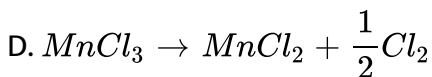
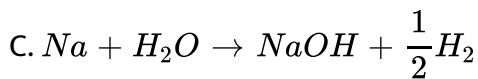
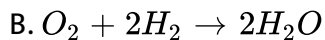
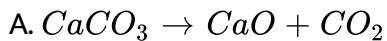
C. -2

D. +6

Answer: A

 [View Text Solution](#)

42. Which of the following is not a redox reaction ?



Answer: A

 [View Text Solution](#)

43. A mole of N_2H_4 loses ten moles of electrons to form a new compound X. Assuming that all the nitrogen appears in the new compound. What is the oxidation state of nitrogen in Y? (There is no change in the oxidation number of hydrogen)

A. -1

B. -3

C. $+3$

D. $+5$

Answer: C



[View Text Solution](#)

44. In which of the following pairs, there is greatest difference in the oxidation number of the underlined elements ?

A. $\underline{N}O_2$ and \underline{N}_2O_4

B. \underline{P}_2O_5 and \underline{P}_4O_{10}

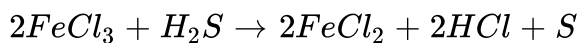
C. \underline{N}_2O and \underline{NO}

D. $\underline{S}O_2$ and $\underline{S}O_3$

Answer: D

 [View Text Solution](#)

45. In the reaction,



A. $FeCl_3$ acts as an oxidizing agent

B. Both H_2S and $FeCl_3$ are oxidized

C. $FeCl_3$ is oxidized while H_2S is reduced

D. H_2S acts as an oxidizing agent

Answer: A

 [View Text Solution](#)

46. Number of moles of $KMnO_4$ required to oxidize one mole of $Fe(C_2O_4)$ in acidic medium is _____

A. 0.6

B. 1.67

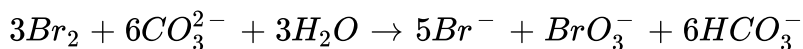
C. 0.2

D. 0.4

Answer: C

 [View Text Solution](#)

47. In the reaction



A. Bromine is oxidized and carbonate is reduce

B. Bromine is reduced and water is oxidized

C. Bromine is neither reduced nor oxidized

D. Bromine is both reduced and oxidized

Answer: D

 [View Text Solution](#)

48. The oxidation number of sulphur in S_8 , S_2F_2 , and H_2S respectively, are ____

A. 0, +1 and -2

B. +2, +1 and -2

C. 0, +1 and +2

D. -2, +1 and -2

Answer: A

 [View Text Solution](#)

49. A metal ion M^{3+} loses 3 electrons, its oxidation number will become

A. +3

B. +6

C. 0

D. -3

Answer: B



[View Text Solution](#)

50. Average oxidation state of Osmium (Os) in OsO_4 is _____

A. +7

B. +6

C. +4

D. +8

Answer: D



[View Text Solution](#)

51. Fluorine is the best oxidizing agent because it has _____

A. highest electron affinity

B. highest E° (reduction)

C. highest E° (oxidation)

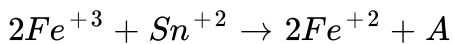
D. lower electron affinity

Answer: B



[View Text Solution](#)

52. Which will be the proper alternative in place of A in the following equation ?



Answer: A



[View Text Solution](#)

53. Number of moles of $K_2Cr_2O_7$ reduced by 1 mole of Sn^{2+} is ____

A. $\frac{1}{6}$

B. $\frac{1}{3}$

C. $\frac{2}{3}$

D. 1

Answer: B



[View Text Solution](#)

54. Which of the following is not a reducing agent ?

A. SO_2

B. H_2O_2

C. CO_2

D. NO_2

Answer: C



[View Text Solution](#)

55. Oxidation state of Cl in HOCl is _____

A. -1

B. $+1$

C. $+3$

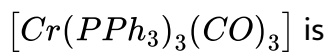
D. $+2$

Answer: B



View Text Solution

56. The oxidation state of chromium in



A. $+3$

B. $+8$

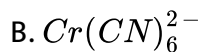
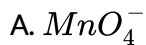
C. zero

D. $+5$

Answer: C

 [View Text Solution](#)

57. Amongst the following, identify the species with an atom in +6 oxidation state ____



Answer: D

 [View Text Solution](#)

58. In the standardization of $Na_2S_2O_3$ using $K_2Cr_2O_7$ by eudiometry, the equivalent weight of $K_2Cr_2O_7$ is ____

A. $\frac{\text{molecular weight}}{2}$

B. $\frac{\text{molecular weight}}{6}$

C. $\frac{\text{molecular weight}}{3}$

D. same as molecular weight.

Answer: B

 [View Text Solution](#)

59. The reaction, $3\text{ClO}^-_{(aq)} \rightarrow \text{ClO}^-_{3(aq)} + 2\text{Cl}^-_{(aq)}$ is an example of

A. oxidation reaction

B. reduction reaction

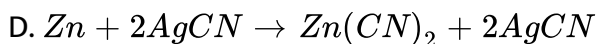
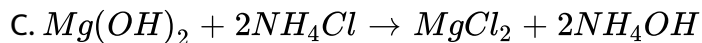
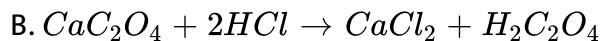
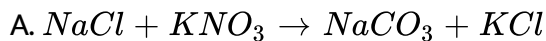
C. disproportionate reaction

D. decomposition reaction

Answer: C

 [View Text Solution](#)

60. Which of the following is a redox reaction ?



Answer: D



[View Text Solution](#)

61. Of the four oxyacids of chlorine the strongest oxidising agent in dilute aqueous solution is _____



D. HOCl

Answer: A

 [View Text Solution](#)

62. HNO_2 acts both as reductant and oxidant, while HNO_3 acts only as oxidant. It is due to their.

- A. Solubility ability
- B. Maximum oxidation number
- C. Minimum oxidation number
- D. Minimum number of valence electrons

Answer: B

 [View Text Solution](#)

63. Which of the following substances acts as an oxidising as well as a reducing agent

- A. Na_2O
- B. $SnCl_2$
- C. Na_2O_2
- D. $NaNO_2$

Answer: D



[View Text Solution](#)

64. What is the oxidation number of O in O_2F_2 ?

- A. -2
- B. -1
- C. 1
- D. $+2$

Answer: C



[View Text Solution](#)

65. Which is the oxidation number of carbon underlined in $CH_3\underline{C}OO \cdot CH_2 \cdot CH_3$?

A. +1

B. +4

C. -3

D. +3

Answer: D



[View Text Solution](#)

66. What is the oxidation number of underlined nitrogen in $NH_4\underline{N}O_3$?

A. -3

B. $+3$

C. $+5$

D. -1

Answer: C



[View Text Solution](#)

67. Oxidation number of iodine in IO_3^- , IO_4^- , KI and I_2 respectively are

A. $-1, -1, 0, +1$

B. $+3, +5, +7, 0$

C. $+5, +7, -1, 0$

D. $-1, -5, -1, 0$

Answer: C

 [View Text Solution](#)

68. Which of the following pairs of transition metal ions are the stronger oxidising agents in aqueous solutions ?

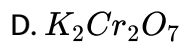
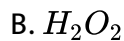
- A. V^{2+} and Cr^{2+}
- B. Ti^{2+} and Cr^{2+}
- C. Mn^{3+} and Co^{3+}
- D. V^{2+} and F^{2+}

Answer: C

 [View Text Solution](#)

69. The compound that can work both as oxidising and reducing agent is

- A. $KMnO_4$



Answer: B



[View Text Solution](#)

70. Which of the following is the most powerful oxidizing agent ?

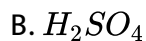


Answer: A



[View Text Solution](#)

71. Which of the following acid processes oxidising reducing and complex forming properties?



Answer: D



[View Text Solution](#)

72. The average oxidation number of iron in Fe_3O_4 (ferrousferic oxide) is

A. +2

B. +3

C. $\frac{8}{3}$

D. $\frac{2}{3}$

Answer: C

 [View Text Solution](#)

73. $Cu + HNO_3 \rightarrow Cu(NO_3)_2 + NO_2 + H_2O$ The number of Nitrogen atoms, water molecules and the total charge on the product side are respectively when above reaction is balanced ?

A. 6, 3, 0

B. 4, 2, 2

C. 4, 2, 0

D. 3, 2, 0

Answer: C

 [View Text Solution](#)

74. Which of the following statements are (T) and which are false (F) ?

(i) Stock notation nomenclature is used for all metallic compounds.

(ii) The oxidation state of fluorine (F) is always -1 in its compounds

(iii) CrO_5 , possesses peroxy rings, where oxidation number of Cr is +6

The oxidation number of O atom in HOF and HO_2^- is 0 and -1 respectively

A. FTFT

B. FTTF

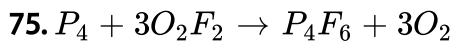
C. FTTF

D. FTTF

Answer: B



[View Text Solution](#)



Which is the reducing agent in the above reactions ?

A. P_4 and O_2F_2 both

B. O_2F_2

C. P_4F_6

D. P_4

Answer: D

 [View Text Solution](#)

76. What is the oxidation state of sulphur in $(NH_4)_2S_2O_8$?

A. 5

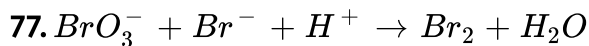
B. 6

C. 4

D. 7

Answer: B

 [View Text Solution](#)



When this reaction is balanced completely, then mention the total charge and number of Bromine atoms on product respectively.

A. 0, 2

B. 0, 6

C. -1, 6

D. -1, 2

Answer: B



[View Text Solution](#)

78. The correct set of oxidation number of nitrogen atom in cyanide ion, ammonium ion, nitrite and nitrate ion, respectively is :

A. -3, +3, -3, -5

B. $-3, +5, -3, +4$

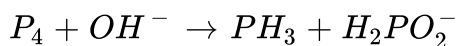
C. $+3, +1, -3, +5$

D. $-3, -3, +3, +5$

Answer: D

 [View Text Solution](#)

79. How many number of P, O and H respectively on L.H.S. and R.H.S in following redox reaction after balanced ?



A. P = 16, O = 12, H = 34

B. P = 4, O = 3, H = 3

C. P = 4, O = 6, H = 9

D. P = 4, O = 6, H = 6

Answer: C



[View Text Solution](#)

80. What is the oxidation number of phosphorous in calcium phosphide ?

- A. -5
- B. -3
- C. $+5$
- D. $+3$

Answer: B



[View Text Solution](#)

81. Which statement is correct for Caro.sacid ?

- A. Oxidation number of two oxygen is (-1)
- B. Oxidation number of S is $+7$
- C. Oxidation number of two oxygen is -1

D. Its formula is $H_2S_2O_8$

Answer: C

 [View Text Solution](#)

82. In which substance oxidation number of oxygen is -1 ?

A. KO_2

B. HO_2^-

C. H_3O^+

D. OF_2

Answer: B

 [View Text Solution](#)

83. Industrial production of caustic soda involved which reaction ____

A. Dehydration of brine solution

B. Only oxidation

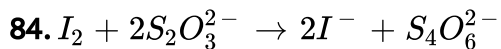
C. Only reduction

D. Redox reaction

Answer: D



[View Text Solution](#)



How many number of electron loss by 2 mole of $S_2O_3^{2-}$ in given redox reaction ?

A. 2.5

B. 1

C. 2

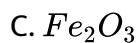
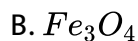
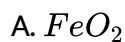
D. 0.5

Answer: C



View Text Solution

85. Formula of iron (III) oxide according to stock notation nomenclature method is....

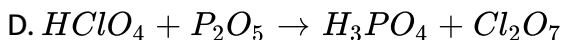
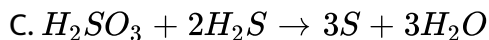
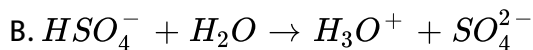
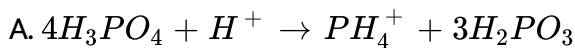


Answer: C



View Text Solution

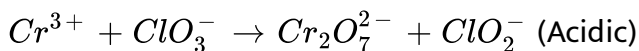
86. Which of the following reaction is a redox reaction ?



Answer: C

 [View Text Solution](#)

87. How many electrons, electrical charge and hydrogen atom at left side balance half reduction reaction in following redox reaction respectively?



A. 6, + 3, 6

B. 6, - 2, 6

C. 6, - 4, 6

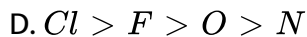
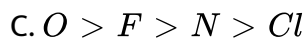
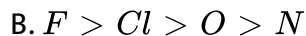
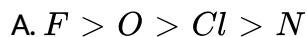
D. 6, - 3, 6

Answer: D



View Text Solution

88. Which is the actual order of N, O, F and Cl as per oxidizing agent ?

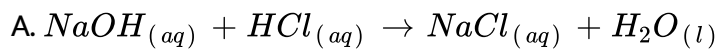


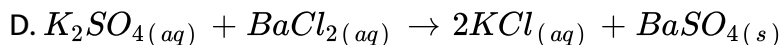
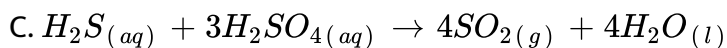
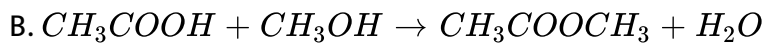
Answer: A



View Text Solution

89. Which of the following is redox reaction ?

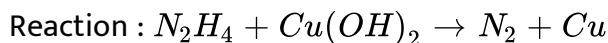




Answer: C

 [View Text Solution](#)

90. State the total increase in the oxidation number of central atom of reducing agent in following reaction.



A. 2

B. 4

C. 0

D. 8

Answer: B

[View Text Solution](#)

91. What is the change in oxidation number and electric charge in following balance redox reaction $CuS + SO_4^{2-} \rightarrow CuO + SO_2$?

A. 4, - 4

B. 2, 0

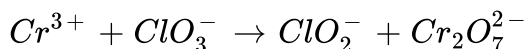
C. 4, -6

D. 6, 0

Answer: D

[View Text Solution](#)

92. How many change in electron and electric charge in balance half reduction reaction for following redox reaction on left hand side ?



A. 6, - 3

B. 6, - 2

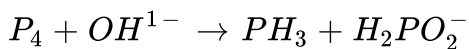
C. 6, 3

D. 6, - 4

Answer: A

 [View Text Solution](#)

93. Following redox in balancing state has how many P, H, O and electric charge on left side respectively.



A. 4, 1, 1, - 1

B. 2, 9, 6, 0

C. 4, 6, 9, - 3

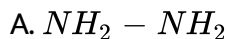
D. 4, 9, 6, - 3

Answer: D



View Text Solution

94. Which of the following compound contain nitrogen atom in its -1 oxidation state ?

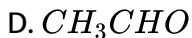
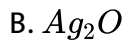
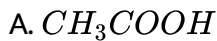


Answer: D



View Text Solution

95. $CH_3CHO + Ag_2O \rightarrow CH_3COOH + 2Ag$. In this reaction, which is reductant (reducing agent)?



Answer: D

 [View Text Solution](#)

96. Arsenic sulphide (As_2S_3) reacts with sulphuric acid (H_2SO_4) to form H_3AsO_4 (Arsenic acid) and sulphur - dioxide (SO_2). What will be the coefficient of H_2SO_4 , H_3AsO_4 and SO_2 respectively in the balanced reaction ?

A. 11, 2 and 14

B. 2, 2 and 4

C. 11, 2 and 11

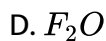
D. 2, 2 and 3

Answer: A



View Text Solution

97. In which of the following compound, oxidation number of oxygen is positive ?

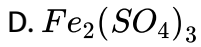
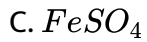
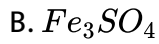
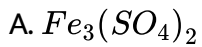


Answer: D



View Text Solution

98. The molecular formula of Iron (III) Sulphate is ____ .



Answer: D



[View Text Solution](#)

99. What is the Oxidation number of sulphur in Perdisulphuric acid ?

A. +4

B. +6

C. -2

D. -1

Answer: B



[View Text Solution](#)

100. On keeping Ag rod in $CuSO_4$

- A. No change in colour intensity of $CuSO_4$ is observed.
- B. Intensity of blue colour of $CuSO_4$ increases first and then decreases.
- C. Intensity of blue colour of $CuSO_4$ decreases.
- D. Intensity of blue colour of $CuSO_4$ increases.

Answer: A

 [View Text Solution](#)

101. $2H_{2(g)} + O_{2(g)} \rightarrow 2H_2(O)_{(l)}$ This reaction is ____ .

- A. Redox
- B. Decomposition

C. Oxidation

D. Reduction

Answer: A

 [View Text Solution](#)

102. In which of the following pair of compounds, oxidation number of P atoms are same?

A. H_3PO_2 and H_3PO_4

B. H_3PO_4 and $H_4P_2O_7$

C. H_3PO_2 and H_3PO_3

D. H_3PO_3 and H_3PO_4

Answer: B

 [View Text Solution](#)

103. Antimony Sulphide (Sb_2S_3) reacts with sulphuric acid (H_2SO_4) to form Antimonic (H_3SbO_4) and sulphur dioxide (SO_2). What are the coefficients of H_2SO_4 , H_3SbO_4 , SO_2 respectively in the balanced redox reaction.

A. 11, 2, 11

B. 2, 4, 4

C. 2, 2, 11

D. 11, 2, 14

Answer: D



[View Text Solution](#)

104. Match the oxidation number of O-atoms of moles of compounds given in column-I with oxidation number values given in column-II and select the correct option:



A. (i) \rightarrow s, (ii) \rightarrow t, (iii) \rightarrow p, (iv) \rightarrow t

B. (i) \rightarrow r, (ii) \rightarrow t, (iii) \rightarrow s, (iv) \rightarrow p

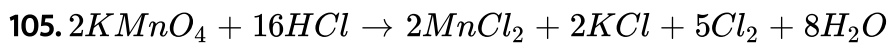
C. (i) \rightarrow q, (ii) \rightarrow r, (iii) \rightarrow p, (iv) \rightarrow s

D. (i) \rightarrow s, (ii) \rightarrow r, (iii) \rightarrow p, (iv) \rightarrow q

Answer: D



View Text Solution



How many moles of HCl undergo oxidative in the above reaction ?

A. 14

B. 10

C. 5

D. 16

Answer: B

 [View Text Solution](#)

106. What is the oxidation number of carbon in diamond ?

A. +2

B. +3

C. +4

D. 0

Answer: D

 [View Text Solution](#)

107. What is the name of TiO_2 according to stock notation nomenclature ?

A. Titanium oxide (IV)

B. Titanium (IV) Oxide

C. Titanium (V) Oxide

D. Titanium (II) Oxide

Answer: B

 [View Text Solution](#)

108. How many electrons are required for the reduction of 1 mole of MnO_4^- to Mn^{2+} ?

A. 3.011×10^{24}

B. 6.022×10^{24}

C. 1.2044×10^{24}

D. 1.8066×10^{24}

Answer: A

 [View Text Solution](#)

109. The number of peroxy rings in CrO_5 is ___

A. 2

B. 3

C. 4

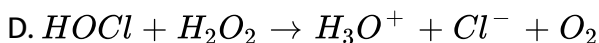
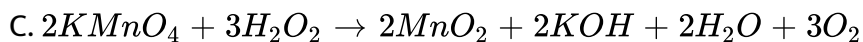
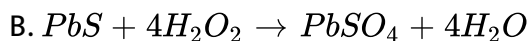
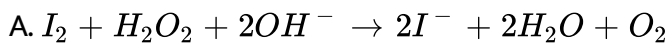
D. 1

Answer: A



[View Text Solution](#)

110. In which of the following reactions H_2O_2 does not act as a reducing agent ?



Answer: B



[View Text Solution](#)

111. When copper is treated with a certain concentration of nitric acid, nitric oxide and nitrogen dioxide are liberated in equal volumes according to the equation,



The coefficients x and y are _____

A. 2 and 3

B. 2 and 6

C. 1 and 3

D. 3 and 8

Answer: B



[View Text Solution](#)

112. Which of the following is a redox reaction ?

A. H_2SO_4 with NaOH

B. In atmosphere, formation of O_3 from O_2 by lightning.

C. Formation of Nitrogen oxides from nitrogen and oxygen by lightning.

D. Evaporation of H_2O

Answer: C



View Text Solution

113. Without losing its concentration, $ZnCl_2$ solution cannot be kept in contact with _____

A. Au

B. Al

C. Pb

D. Ag

Answer: B

 [View Text Solution](#)

114. When $KMnO_4$ acts as an oxidizing agent and ultimately forms MnO_4^{-2} , MnO_2 , Mn_2O_3 and Mn^{+2} , then number of electrons transferred in each case respectively is _____

A. 4, 3, 1, 5

B. 1, 5, 3, 7

C. 1, 3, 4, 5

D. 3, 5, 7, 1

Answer: C

 [View Text Solution](#)

115. Excess of KI reacts with $CuSO_4$ solution if $Na_2S_2O_3$ solution is added in it. Which of the statements is incorrect for the reaction ?

A. Evolved I_2 is reduced

B. CuI_2 is formed

C. $Na_2S_2O_3$ is oxidized

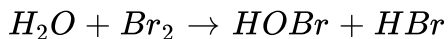
D. Cu_2F_2 is formed

Answer: B



[View Text Solution](#)

116. Which is the best description of the behavior of bromine in the reaction given below ?



A. Proton acceptor only

B. Both oxidized and reduced

C. Oxidized only

D. Reduced only

Answer: B



[View Text Solution](#)

117. The oxidant which is used as an antiseptic is _____

A. $KBrO_3$

B. $KMnO_4$

C. CrO_3

D. KNO_3

Answer: B



[View Text Solution](#)

118. What is the oxidising agent in chlorine water ?

A. HCl

B. $HClO_2$

C. HOCl

D. None of these

Answer: C



[View Text Solution](#)

119. In organic reaction, metallic lithium in liquid ammonia behaves as

A. Oxidising agent

B. Reducing agent

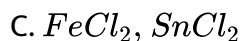
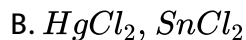
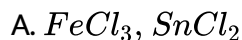
C. Bleaching agent

D. Dehydrating agent

Answer: B

 [View Text Solution](#)

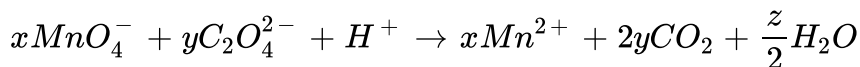
120. The pair of compounds that can exist together is :



Answer: C

 [View Text Solution](#)

121. Consider the following reaction :



The values of x, y and z in the reaction are, respectively :

A. 5, 2 and 16

B. 2, 5 and 8

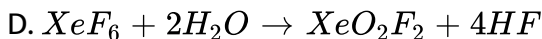
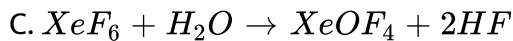
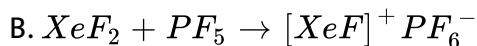
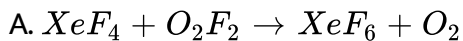
C. 2, 5 and 16

D. 5, 2 and 8

Answer: C

 [View Text Solution](#)

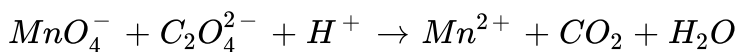
122. Which of the following reactions is an example of a redox reaction ?



Answer: A

 [View Text Solution](#)

123. For the redox reaction



the correct coefficients of the reactants for the balanced equation are

- A. MnO_4^- $\text{C}_2\text{O}_4^{2-}$ H^+
5 16 2
- B. MnO_4^- $\text{C}_2\text{O}_4^{2-}$ H^+
16 5 2
- C. MnO_4^- $\text{C}_2\text{O}_4^{2-}$ H^+
2 16 5
- D. MnO_4^- $\text{C}_2\text{O}_4^{2-}$ H^+
2 5 16

Answer: D



[View Text Solution](#)

124. In the reaction of oxalate with permanganate in acidic medium, the number of electrons involved in producing one molecule of CO_2 is ___

A. 10

B. 1

C. 5

D. 2

Answer: B



[View Text Solution](#)

125. The oxidation number of K in K_2O , K_2O_2 and KO_2 respectively is ...

A. +0.5, +4, +1

B. +2, +1, +0.5

C. +1, +1, +1

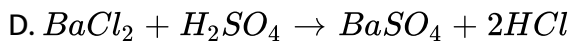
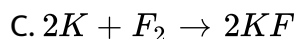
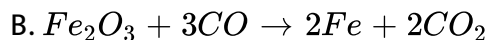
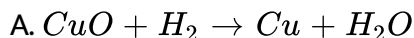
D. +0.5, +1, +2

Answer: C



[View Text Solution](#)

1. Which of the following is not an example of redox reaction ?



Answer: D

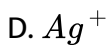
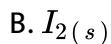
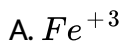


[View Text Solution](#)

2. The more positive the value of E^\ominus , the the greater is the tendency of the species to get reduced. Using the standard electrode potential of redox couples given below find out which of the following is the strongest oxidising agent ?

$$E_{Fe^{+3}/Fe^{+2}}^{\ominus} = +0.77\text{volt}, E_{I_2/I^-}^{\ominus} = +0.54\text{volt}$$

$$E_{Cu^{+2}/Cu}^{\ominus} = +0.34\text{volt}, E_{Ag^+/Ag}^{\ominus} = +0.80\text{volt}$$



Answer: D

 [View Text Solution](#)

3. E^{\ominus} values of some redox couples are given below, On the basis of these values choose the correct option.

$$E_{Br_2/Br^-}^{\ominus} = +1.90\text{volt}, E_{Ag^+/Ag(s)}^{\ominus} = +0.80\text{volt}$$

$$E_{Cu^{+2}/Cu(s)}^{\ominus} = +0.34\text{volt}, E_{I_{2(s)}/I^-}^{\ominus} = +0.54\text{volt}$$

A. Cu will reduced Br^-

B. Cu will reduced Ag

C. Cu will reduced I^-

D. Cu will reduced Br_2

Answer: D

 [View Text Solution](#)

4. Using the standard electrode potential, find out the pair between which redox reactions is not possible ?

$$E_{Fe^{+3}/Fe^{+2}}^{\ominus} = + 0.77\text{volt}, E_{I_2/I^-}^{\ominus} = + 0.54\text{volt}$$

$$E_{Cu^{+2}/Cu}^{\ominus} = + 0.34\text{volt}, E_{Ag^+/Ag^-}^{\ominus} = + 0.80\text{volt}$$

A. Fe^{+3} and I^-

B. Ag^+ and Cu

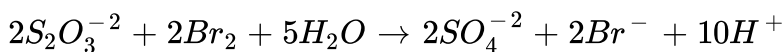
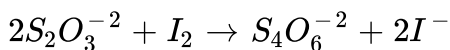
C. Fe^{+3} and Cu

D. Ag and Fe^{+3}

Answer: D

 [View Text Solution](#)

5. Thiosulphate reacts differently with iodine and bromine in the reactions given below



Which of the following statements justifies the above dual behaviour of thiosulphate ?

- A. Bromine is stronger oxidants than iodine.
- B. Bromine is weaker oxidant than iodine.
- C. Thiosulphate undergoes oxidation by bromine and reduction by iodine in these reactions.
- D. Bromine undergoes oxidation and iodine undergoes reduction in these reactions.

Answer: A



6. The oxidation number of an element in a compound is evaluated on the basis of certain rules. Which of the following is incorrect in this respect ?

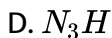
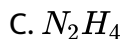
- A. The oxidation number of hydrogen is always +1.
- B. The algebraic sum of the all the oxidation numbers in a compound is zero.
- C. An element in the free or the uncombined state bears oxidation number zero.
- D. In all its compounds, the oxidation number of fluorine is -1.

Answer: A



[View Text Solution](#)

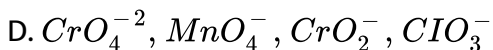
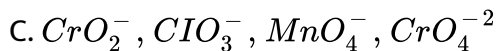
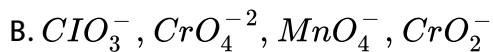
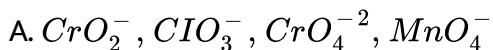
7. In which of the following compounds, an element exhibits two different oxidation states ?



Answer: B

 [View Text Solution](#)

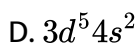
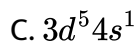
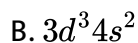
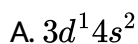
8. Which of the following arrangements represent increasing oxidation number of the central atom ?



Answer: A

 [View Text Solution](#)

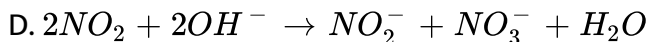
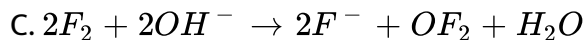
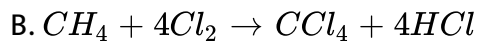
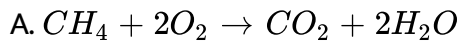
9. The largest oxidation number exhibited by an element depends on its outer electronic configuration. With which of the following outer electronic configurations the element will exhibit largest oxidation number?



Answer: D

 [View Text Solution](#)

10. Identify disproportionation reaction.



Answer: D



[View Text Solution](#)

11. Which of the following elements does not show disproportionation tendency?

A. Cl

B. Br

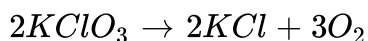
C. F

D. I

Answer: C

 [View Text Solution](#)

12. Which of the following statement(s) is/are not true about the following decomposition reaction ?

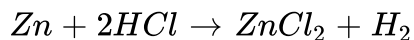


- A. Potassium is undergoing oxidation.
- B. Chlorine is undergoing oxidation.
- C. Oxygen is reduced.
- D. None of the species are undergoing oxidation or reduction.

Answer: A::B::C::D

 [View Text Solution](#)

13. Identify the correct statement(s) in relation to the following reaction ?



- A. Zinc is acting as an oxidant.
- B. Chlorine is acting as a reductant
- C. Hydrogen ion is acting as an oxidant.
- D. Zinc is acting as a reductant.

Answer: C::D

 [View Text Solution](#)

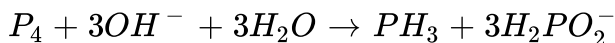
14. The exhibition of various oxidation states by an element is also related to the outer orbital electronic configuration of its atom. Atom (S) having which of the following outermost electronic configurations will exhibit more than one oxidation state in its compounds ?

- A. $3s^1$
- B. $3d^14s^2$
- C. $3d^24s^2$
- D. $3s^23p^3$

Answer: B::C::D

 [View Text Solution](#)

15. Identify the correct statements with reference to the given reaction



- A. Phosphorus is undergoing reduction only.
- B. Phosphorus is undergoing oxidation only.
- C. Phosphorus is undergoing oxidation as well as reduction.
- D. Hydrogen is undergoing neither oxidation nor reduction.

Answer: C::D

 [View Text Solution](#)

16. Which of the following electrodes will act as anodes, which connected to Standard Hydrogen Electrode ?

A. $Al/Al^{+3} \quad E^{\ominus} = -1.66$

B. $Fe/Fe^{+2} \quad E^{\ominus} = -0.44$

C. $Cu/Cu^{+2} \quad E^{\ominus} = +0.34$

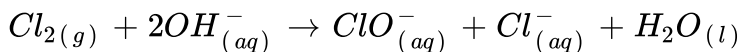
D. $F_{2(g)}/2F_{(aq)}^{-} \quad E^{\ominus} = 02.87$

Answer: A:B

 [View Text Solution](#)

Section D Ncert Exemplar Solution Short Answer Type

1. The reaction



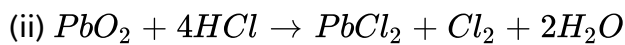
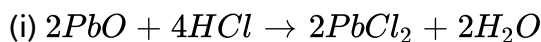
represents the process of bleaching. Identify and name the species that bleaches the substances due to its oxidising action.

 [View Text Solution](#)

2. MnO_4^{-2} undergoes disproportionation reaction in acidic medium but MnO_4^- does not. Give reason.

 [View Text Solution](#)

3. PbO and PbO_2 react with HCl according to following chemical equations



Why do these compounds differ in their reactivity ?

 [View Text Solution](#)

4. Nitric acid is an oxidising agent and reacts with PbO but it does not react with PbO_2 . Explain why ?

 [View Text Solution](#)

5. Write balanced chemical equation for the following reaction.

(a) Permanganate ion (MnO_4^-) reacts with sulphur dioxide gas in acidic medium to produce Mn^{+2} and hydrogen sulphate ion. (Balance by ion electron method)

(b) Reaction of liquid hydrazine (N_2H_4) with chlorate ion (ClO_3^-) in basic medium Produces nitric oxide gas and chloride ion in gaseous state. (Balance by oxidation in the following species. number method)

(c) Dichlorine heptaoxide (Cl_2O_7) in gaseous state combines with an aqueous solution of hydrogen peroxide in acidic medium to give chlorite ion (ClO_2^-) and oxygen gas. (Balance by ion electron method)

 [View Text Solution](#)

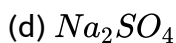
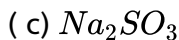
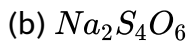
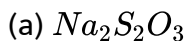
6. Calculate the oxidation number of phosphorus in the following species.

(a) HPO_3^{-2}

(b) PO_4^{-3}

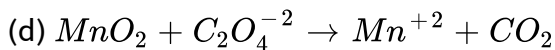
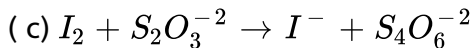
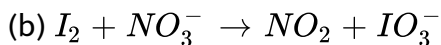
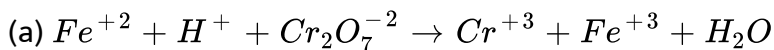
 [View Text Solution](#)

7. Calculate the oxidation number of each sulphur atom in the following compounds.



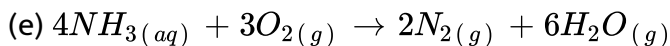
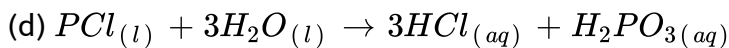
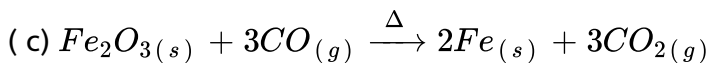
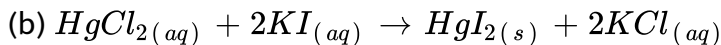
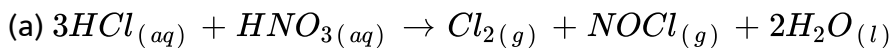
 [View Text Solution](#)

8. Balance the following equations by the oxidation number method.



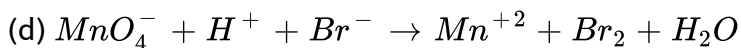
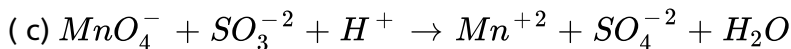
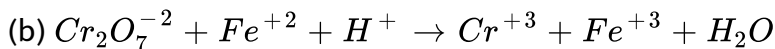
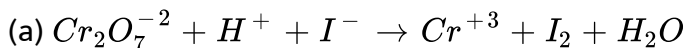
 [View Text Solution](#)

9. Identify the redox reaction out of the following reactions and identify the oxidising and reducing agents in them.



 [View Text Solution](#)

10. Balance the following ionic equation.



 [View Text Solution](#)

Section D Ncert Exemplar Solution Match The Following

1. Match the column-I with column-II for the oxidation states of the central atoms.



 [View Text Solution](#)

Section D Ncert Exemplar Solution Assertion And Reason Type

1. Assertion (A) : Among halogens fluorine is the best oxidant.

Reason (R): Fluorine is the most electronegative atom.

- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R true but R is not the correct explanation of A.
- C. A is true but R is false.
- D. Both A and R are false.

Answer: B



[View Text Solution](#)

2. Assertion (A) : In the reaction between potassium permanganate and potassium iodide, permanganate ions act as oxidising agent.

Reason (R) : Oxidation state of manganese changes from +2 to +7 during the reaction.

- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R true but R is not the correct explanation of A.
- C. A is true but R is false.
- D. Both A and R are false.

Answer: C



[View Text Solution](#)

3. Assertion (A) : The decomposition of hydrogen peroxide to form water and oxygen is an example of disproportionation reaction.

Reason (R) : The oxygen of peroxide is in -1 oxidation state and it is converted to zero oxidation state in O_2 and -2 oxidation state in H_2O .

- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R true but R is not the correct explanation of A.
- C. A is true but R is false.
- D. Both A and R are false.

Answer: A

 [View Text Solution](#)

4. Assertion (A) : Redox couple is the combination of oxidised and reduced form of a substance involved in an oxidation or reduction half cell.

Reason (R) : In the representation

$E_{Fe^{3+}/Fe^{2+}}^{\ominus}$ and $E_{Cu^{2+}/Cu}^{\ominus}$, Fe^{3+}/Fe^{2+} and Cu^{2+}/Cu are redox couples.

- A. Both A and R are true and R is the correct explanation of A.
- B. Both A and R true but R is not the correct explanation of A.
- C. A is true but R is false.
- D. Both A and R are false.

Answer: A

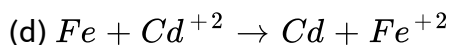
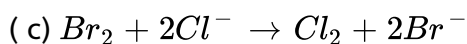
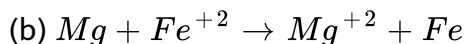
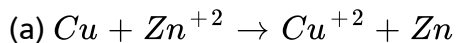
 [View Text Solution](#)

Section D Ncert Exemplar Solution Long Answer Type

1. Explain redox reactions on the basic of electron transfer. Give suitable examples.

 [View Text Solution](#)

2. On the basis of standard electrode potential values, suggest which of the following reactions would take place ? (Consult the book for E^\ominus value)



[View Text Solution](#)

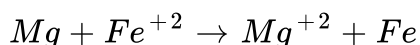
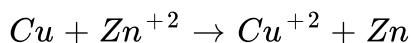
3. Why does fluorine not show disproportionation reaction ?

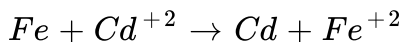
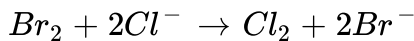


[View Text Solution](#)

4. Write redox couples involved in the reaction (a) to (d) given in que. No.

34.





 [View Text Solution](#)

5. Find out the oxidation number of chlorine in the following compounds and arrange them in increasing order of oxidation number of chlorine.

NaClO_4 , NaClO_3 , NaClO , KClO_2 , Cl_2O_7 , ClO_3 , Cl_2O , NaCl , Cl_2 , ClO_2

Which oxidation state is not present in any of the above compounds ?

 [View Text Solution](#)

6. Which method can be used to find out strength of reductant/oxidant in a solution ? Explain with an example.

 [View Text Solution](#)