NEET ANSWER KEY & SOLUTIONS

SUBJECT :- CHEMISTRY

CLASS :- 11th **PAPER CODE :- CWT-8**

CHAPTER :- REDOX

ANSWER KEY

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

SOLUTIONS

SECTION-A

1. (D)

Sol. $F = (9)\ 1s^2\ 2s^2\ 2p^5$

It form only one bond. It is smaller size. It has very high electronegativity

2. (C)

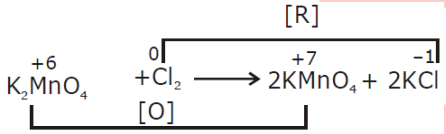
Sol. $2K_2MnO_4 + Cl_2 \rightarrow 2KMnO_4 + 2KCl$

$K_2MnO_4 \rightarrow 2 + x - 8 = 0$ Cl_2

$x = +6$

$KMnO_4$ $1 + x - 8 = 0$ $x = +7$

KCl $1 + x = 0$ $x = -1$



Oxidation & reduction boths are in the reaction in called redox reaction .

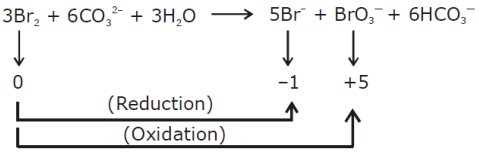
3. (B)

Sol. $3Br_2 + 6CO_3^{2-} + 3H_2O \rightarrow 5Br^- + BrO_3^- + 6HCO_3^-$

The oxidation no. value

$Br_2 = 0$, $CO_3^{2(-)} = -2$

$H_2O = 0$, $BrO_3^- = -1$



4. (C)

Sol. $SO_2 + K_2Cr_2O_7 \xrightarrow{[H^+]} Cr_2(SO_4)_3$

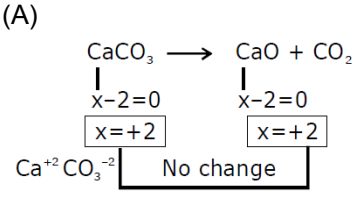
$2 + 2x - 14 = 0$ $2x - 2 \times 3 = 0$

$x = +6$ $x = +3$

+6 to + 3

5. (A)

Sol.



6. (C)

Sol. $[Co(CN)_6]^{3-}$

$x - 1 \times 6 = -3$

$x = +3$

7. (D)

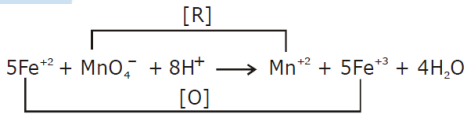
Sol. $MnO_2 + 4HCl \rightarrow MnCl_2 + Cl_2 + 2H_2O$

$MnO_2 + 4$, $MnCl_2 + 2$

$Mn + 4 \rightarrow +2$ oxidation state

8. (C)

Sol. $KMnO_4 + FeSO_4 \xrightarrow{H^+}$



Fe $\rightarrow$ +2 to +3 is oxidation.

9. (C)

Sol. Oxidation number of oxygen change from -1 to -2 and 0.

$H_2O_2 + H_2O_2 \rightarrow 2H_2O + O_2$

-1 0

10. (C)

Sol. $\overset{0}{4P} + 3KOH + 3H_2O \rightarrow 3KH_2\overset{+1}{P}O_2 + \overset{-3}{P}H_3$

11. (A)

Sol. KH : $1 + x = 0$, $x = -1$

MgH_2 : $2 + 2x = 0$, $x = -1$

NaH : $1 + x = 0$, $x = -1$

12. (D)

Sol. All act as both oxidising and reducing agents since all have both higher and lower oxidation state than their current oxidation state.

13. (A)

Sol. Reducing agent = oxidation

(A) CO_2 : $x - 4 = 0$; $x = +4$

(B) HNO_2 : $1 + x - 4 = 0$; $x = +3$

(C) H_3PO_3 : $3 + x - 6 = 0$; $x = +3$

(D) H_2SO_3 : $2 + x - 6 = 0$; $x = +4$

CO_2 has attained its maximum value +4 so it can't be oxidised further.

14. (B)

Sol. $H_2C_2O_4 + H_2O_2 \longrightarrow 2CO_2 + 2H_2O$

15. (A)

Sol. –3 to +5

16. (C)

Sol. Mn+2 → MnO_4^-

+2 x – 8 = -1

x = +7

17. (B)

Sol. Cr : +1 to +6

18. (B)

Sol. $Fe^{+2} + MnO_4^- + 8H^+ \longrightarrow Mn^{+2} + 5Fe^{+3} + 4H_2O$

+7 → +2, $5e^-$

Acidic medium = $\frac{M}{5}$

19. (C)

Sol. $K_2Cr_2O_7$ in acidic medium.

$Cr_2O_7 - 2$

$2x - 14 = -2$

$\boxed{x=+6}$

$$\text{Equivalent weight} = \frac{\text{Molecular weight}}{\text{n-factor}} = \frac{M}{6}$$

20. (D)

Sol. $2Na_2S_2O_3 + I_2 \rightarrow Na_2S_4O_6 + 2NaI$

$Na_2S_2O_3$: $2+2x-6=0$, $x=+2$

$Na_2S_4O_6$: NaO–S(O)(O)–S–S(O)(O)–O=Na, +4 +4

$Na_2S_2O_3 \Rightarrow +2$

$Na_2S_4O_6 = +4$

Change of e– = $+2e^-$

$$\frac{M}{2} \times \text{No.of atom} = \frac{M}{2} \times 2 = M$$

21. (A)

Sol. $C_{12}H_{22}O_{11} \rightarrow \text{Molecular mass} = 342$

$$\overset{0}{C}_{12}H_{22}O_{11} + 36HNO_3 \rightarrow 6H_2\overset{+3}{C}_2O_4 + 36NO_2 + 23H_2O$$

No. of e^- change $= 6 \times 2 \times 3$

$= 36\ e^{-s}$

$$\text{Equivalent weight} = \frac{\text{Molecular mass}}{\text{No. of } e^- \text{ involved}} = \frac{342}{36}$$

22. (D)

Sol. $P_4 + NaOH \longrightarrow NaH_2PO_2 + PH_3$

0 → $1+2+x-4=0$, $x=-3$

$x=+1$

Change charge = 3.

Phosphorus $4 \times \frac{M}{3} : \frac{4 \times 31}{3}$

23. (D)

Sol. $2HI + H_2SO_4 \longrightarrow I_2 + SO_2 + 2H_2O$

24. (A)

Sol. $CaCO_3 \longrightarrow CaO + CO_2$

+2 (No change) +2

∴ No redox reaction

25. (D)

Sol. $Cr(CN)_6^{-3}$ x – 6 = –3 [x = +3]

CrO_2Cl_2 x – 4 – 2 = 0 [x = +6]

26. (C)

Sol. $MnO_4^- + SO_3^{2-} + H^+ \rightarrow SO_4^{2-} + Mn^{+2} + H_2O$

MnO_4^- x – 8 = –1 ⇒ x = +7

SO_3^{2-} : – x – 6 = –2 – x = +4

SO_4^{2-} : x – 8 = –2 → x = +6

Mn^{+2} = x = +2.

Mn → +7 → +2 Reduce

S → +4 →+6 Oxidise

27. (C)

Sol. Lowest oxidation state

(A) $FeSO_4.(NH_4)_2SO_4.6H_4O$ x – 2 + 1 – 2 = 0 [x = 3]

(B) $K_4[Fe(CN)_6]_4$ + x – 6 = 0, [x = +2]

(C) $Fe(CO)_5$ x + 5 × 0 = 0 [x = 0]

(D) $Fe_{0.94}O$: $_{0.94}(x)+(-2)=0$

[x = 2.12]

28. (B)

Sol. $Mn_2O_3 \Rightarrow 2x - 6 = 0$ [x = 3]

$MnO_2 \Rightarrow x - 4 = 0$ [x = +4]

$MnO_4^{(-)} \Rightarrow x - 8 = -1$ [x = +7]

$MnO_4^{-2} \Rightarrow x - 8 = -2$ [x= +6]

$MnSO_4 \Rightarrow Mn^{+2}$ [x = +2]

$MnSO_4 \Rightarrow +2, MnO_2 \Rightarrow +4$

Just double

29. (D)

Sol. $NH_4^+ \Rightarrow +1$

30. (B)

Sol. $KMnO_4 \Rightarrow 1 + x - 8 = 0$ [x +7]

$H_2S \Rightarrow 2 + x = 0$, x = –2

$K_2Cr_2O_7 \Rightarrow 2 + 2x - 14 = 0$ [x = +6]

$Br_2 = 0$

HNO_2 : 1 + x – 4 = 0 [x = –3]

H_2S has very low oxidation no.

31. (A)

Sol. $\overset{+5}{K}\overset{}{N}\overset{}{O_3}, \overset{+3}{H}\overset{}{N}\overset{}{O_2}, \overset{-3}{N}\overset{}{H_4}Cl, Na\overset{-\frac{1}{3}}{N_3}$

32. (D)

Sol. $MnO_4^- + 8H^+ + 5C_2O_4^{2-} \rightarrow Mn^{2+} + 10CO_2 + 4H_2O$

$MnO_4^- + 8H^+ + C_2O_4^{2-} \rightarrow Mn^{2+} + CO_2 + H_2O$

MnO_4^- = +1

H^+ = 8

$C_2O_4^{2-}$ = 5

Mn^{2+} = 1

CO_2 = 10

H_2O = 4

33. (A)

Sol. Br_2 to BrO_3^-

O $\longrightarrow$ x – 6 = –1

x = +5

Br = 0 to +5

34. (C)

Sol. For $FeSO_4$

$Fe^{2+} \longrightarrow Fe^{3+}$ (No. of e^- involved = 1)

As $FeSO_4$ requires least number of electrons , thus it will require least amount of $KMnO_4$.

35. (D)

Sol. $[Co(NH_3)4\ (H_2O)\ Cl]SO_4$.

x + 4 × 0 + 0 – 1 – 2 = 0

x = +3

SECTION-B

36. (A)

Sol. N_3H_3 x + 1 = 0 x = –1/3

37. (D)

Sol. $2CrO_4^{2-} + 2H^+ \rightarrow Cr_2O_7^{2-} + H_2O$

CrO_4^{2-} + 6, $Cr_2O_7^{2-} \Rightarrow$ +6

Oxidising agent = Reduction

38. (C)

Sol. $Mg(HXO_3)$

+2 + 1 +X – 6 = 0

X = +3

39. (D)

Sol. $\overset{+7}{M}nO_4^- \quad \overset{+6}{C}r_2O_7^{2-} \quad \overset{+5}{V}O_+^2$

40. (A)

Sol. H_2O_2 : 2 + 2x = 0; x = –1

41. (A)

Sol.

$CrO_4^{2-} \longrightarrow Cr_2O_7^{2-}$

+6 $\longrightarrow$ +6 $\rightarrow$ No change

Cr $\longrightarrow$ $CrCl_3$ $\rightarrow$ Oxidation

O +3

42. (D)

Sol.

PH_4^+ , PO_2^{3-}, PO_4^{3-} , PO_3^{3-}

O.N.: –3 +1 +5 +3

43. (B)

Sol. $NO_3^- + 4H^+ \rightarrow 2H_2O + NO$

–1 + 4 $\rightarrow$ 0

+3 $\rightarrow$ 0

+3 – 3e = 0

Left side $3e^{(-)}$

44. (A)

Sol. (1) $N_3H \longrightarrow$ O.N. of $N = \frac{-1}{3}$

(2) $NH_2OH \longrightarrow$ O.N. of $N = -1$

(3) $N_2H_4 \longrightarrow$ O.N. $N = -2$

(4) $NH_3 \longrightarrow$ O.N. of $N = -3$

45. (D)

Sol. $8Al + 3Fe_3O_4 \rightarrow 4Al_2O_3 + 9Fe$

Aluminium is he reductant

Al $\rightarrow$ 0

$Al_2O_3 \rightarrow$ 2x – 6 = 0

x = + 3

No. of e^- released = 8 x 3 = 24 e^-

Since the equation is balanced,

The no. of e^- transfered from reductant to oxidant is 24 e^-

46. (C)

Sol. It is true that SO_2 and Cl_2 both are bleaching agents. But Cl_2 is an oxidising agent while SO_2 is a reducing agent. Therefore, in this questions assertion is true while reason is false.

47. (B)

Sol. It is correct that fluorine exists only in –1 oxidation state because it has $1s^2 2p^5$ electronic configuration and thus shows only –1 oxidation state in order to complete its octet. Hence, both assertion and reason are true and reason is not a correct explanation of assertion.

48. (D)

Sol. Here, assertion is false, because stannous chloiride is a strong reducing agent not strong oxidising agent. Stannous chlorides gives Grey precipitate with mercuric chloride. Hence, reason is true.

49. (B)

Sol. Both assertion and reason are true but reason is not the correct explanation of assertion. Greater the number of negative atoms present in the oxy-acid make the acid stronger. In general, the strengths of acids that have general formula $(HO)_m ZO_n$ can be related to the value of n. As the value of n increases, acidic character also increases. The negative atoms draw electrons away from the Z-atom and make it more positive. The Z-atom, therefore, becomes more effective in with drawing electron density away from the oxygen atom that bonded to hydrogen. in turn, the electrons of $H-O$ bond are drawn more strongly away from the H-atom. The net effect makes it easier from the proton release and increases the acid strength.

50. (A)

Sol. Both assertion and reason are true and reason is the correct explanation of assertion.