



ST. LAWRENCE HIGH SCHOOL

A JESUIT CHRISTIAN MINORITY INSTITUTION

SOLUTION-15(CLASS-11)

TOPIC- REDOX EQUILIBRIA



SUBTOPIC- ION-ELECTRON METHOD AND OXIDATION METHOD

SUBJECT – CHEMISTRY

DURATION – 30 mins

F.M. - 15

DATE -01.07.20

1.1 Which of the following represents a redox reaction?

- (a) $\text{NaOH} + \text{HCl} \rightarrow \text{NaCl} + \text{H}_2\text{O}$
- (b) $\text{BaCl}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + 2\text{HCl}$
- (c) $\text{CuSO}_4 + 2\text{H}_2\text{O} \rightarrow \text{Cu}(\text{OH})_2 + \text{H}_2\text{SO}_3$
- (d) $\text{Zn} + 2\text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$

Ans. d

1.2 Which reaction involves neither oxidation nor reduction?

- (a) $\text{CrO}_4^{2-} \rightarrow \text{Cr}_2\text{O}_7^{2-}$
- (b) $\text{Cr} \rightarrow \text{CrCl}_3$
- (c) $\text{Na} \rightarrow \text{Na}^+$
- (d) $2\text{S}_2\text{O}_3^{2-} \rightarrow \text{S}_4\text{O}_6^{2-}$

Ans. a

1.3 Zn gives H_2 gas with H_2SO_4 and HCl but not with HNO_3 because-

- (a) Zn acts as an oxidising agent when it reacts with HNO_3 -
- (b) HNO_3 is weaker acid than H_2SO_4 and HCl
- (c) In electrochemical series Zn is above hydrogen
- (d) NO_3^- is reduced in preference to hydronium ion

Ans. d

1.4 A compound of Xe and F is found to have 53.5% of Xe. What is the oxidation number of Xe in this compound?

- (a) -4
- (b) 0
- (c) +4
- (d) -6

Ans. d

1.5 A solution contains Fe^{2+} , Fe^{3+} and I^- ions. This solution was treated with iodine at 35°C .

E° for $\text{Fe}^{3+}/\text{Fe}^{2+}$ is 0.77V and E° for $\text{I}_2/2\text{I}^-$ = 0.536V. The favorable redox reaction is-

- (a) I_2 will be reduced to I^-
- (b) there will be no redox reaction
- (c) I^- will be oxidised to I_2
- (d) Fe^{2+} will be oxidised to Fe^{3+}

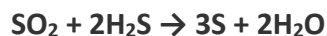
Ans. c

1.6 One mole of N_2H_4 loses 10 moles of electrons to form a new compound y. Assuming that all nitrogen appears in the new compound, what is the oxidation state of nitrogen in y.

(a) -1 (b) -3 (c) +3 (d) +5

Ans. c

1.7 The equivalent mass of oxidising agent in the following reaction is:



(a) 32 (b) 64 (c) 16 (d) 8

Ans. c

1.8 In the reaction:



- a) Bromine is oxidised and carbonate is reduced
- b) Bromine is reduced and water is oxidized
- c) Bromine is neither reduced nor oxidized
- d) Bromine is both reduced and oxidized

Ans. d

1.9 Which of the following cannot function as an oxidising agent?

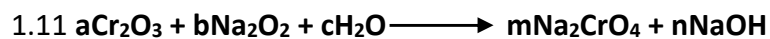
(a) I^- (b) $\text{Si}(s)$ (c) $\text{NO}_3^-(aq)$ (d) $\text{Cr}_2\text{O}_7^{2-}$

Ans. a

1.10 The oxidation number of Pt in $[\text{Pt}(\text{C}_2\text{H}_4)\text{Cl}_3]^-$ is:

(a) +1 (b) +2 (c) +3 (d) +4

Ans. b



(a) $b=3, n=4$ (b) $b=3, n=2$ (c) $b=1, n=2$ (d) $b=3, n=4$

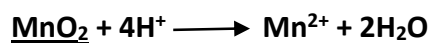
Ans.

1.12 The oxidation number of Cr in Cr_2O_3 is-

(a) +6 (b) +5 (c) +2 (d) +3

Ans.

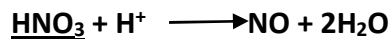
1.13 Determine the equivalent weights of the following marked compounds by applying the oxidation number and electronic methods-



(a) 25 (b) 37.2 (c) 158 (d) 27.5

Ans. d

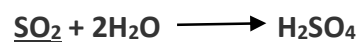
1.14 Determine the equivalent weights of the following marked compounds by applying the oxidation number and electronic methods-



(a) 63 (b) 21 (c) 13 (d) 31

Ans. b

1.15 Determine the equivalent weights of the following marked compounds by applying the oxidation number and electronic methods-



(a) 32 (b) 64 (c) 25 (d) 23

Ans. a

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