

# RviY-weRviY I mgZvKiY(Oxidation-Reduction)

**RviY Kv‡K e‡jt** B‡jKU«bxq gZev` Abymv‡i, ‡h ivmvqwbK wewµqvi ‡Kvb cigvYy ev g~jK ev Avqb GK ev GKvwaK B‡jKU«b `vb K‡i ‡mB wewµqv‡K RviY e‡j| wKš‘ ‡h ivmvqwbK mË¡v **e-** `vb K‡i Zv‡K weRviK c`v\_© e‡j|

**weRviY Kv‡K e‡jt** B‡jKU«bxq gZev` Abymv‡i, ‡h ivmvqwbK wewµqvi ‡Kvb cigvYy ev g~jK ev Avqb GK ev GKvwaK B‡jKU«b M«nY K‡i ‡mB wewµqv‡K weRviY e‡j| wKš‘ ‡h ivmvqwbK mË¡v **e-** M«nY K‡i Zv‡K RviK c`v\_© e‡j|

**RviY weRviY wewµqvi D`vniYt** ‡mvwWqvg I ‡K¬vwib Gi cvi¯úvwiK wewµqvq **NaCl** Drcbœ nq|

**2Na** + **Cl2 ⟶ 2NaCl**

**GB wewµqvwU RviY weRvi‡Yi B‡jKU«bxq gZev‡`i Av‡jv‡K wb‡gœ e¨vL¨v Kiv njt** B‡jKU«bxq gZev` Abymv‡i, GB wewµqvq c«‡Z¨K ‡mvwWqvg (**Na**) cigvYy Gi me©ewnt¯’ ¯Í‡i n‡Z GKwU B‡jKU«b `vb K‡i wb‡R RvwiZ n‡q ‡mvwWqvg Avq‡b (**Na+**) cwiYZ nq| Aciw`‡K, c«‡Z¨K ‡K¬vwib cigvYy ‡mvwWqvg c«`Ë GKwU B‡jKU«b M«nY K‡i wb‡R weRvwiZ n‡q ‡K¬vivBW Avq‡b (**Cl−**) cwiYZ nq| AZtci, wfbœag©x Dfq Avqb hy³ n‡q **NaCl** MVb K‡i|

**RviYt 2Na** (weRviK) **⟶** **2Na**++ **2e−**

**weRviYt** **Cl2** (RviK) + **2e**− **⟶ 2Cl−**

(+) K‡i,

**2Na** + **Cl2 ⟶ 2Na+Cl−** ​ev, **2NaCl**

Kv‡RB ‡`Lv hvq ‡h, ‡Kvb c`v\_© RvwiZ nIqvi mgq B‡jKU«b Z¨vM K‡i Ges weRvwiZ nIqvi mgq B‡jKU«b M«nY K‡i| RviY wewµqvq weRviK hZwU B‡jKU«b `vb K‡i weRviY wewµqvq RviK ZZwU B‡jKU«b M«nY K‡i| A\_©vr RviY I weRviY wewµqvq B‡jKU«b Av`vb c«`vb N‡U| Bnv B‡jKU«bxq gZev‡`i g~j K\_v|

**RviY weRviY GKwU hyMcr wewµqvi, e¨vL¨vt** RviY I weRviY c«wµqv `yBwU ci¯ú‡ii wecixZ I m¤ú~iK| hLb ‡Kvb RviY wµqv N‡U ZLb Zvi AbyeZ©x weRviY Ges hLb ‡Kv‡bv weRviY wµqv N‡U ZLb Zvi AbyeZ©x wµqvI Aek¨B N‡U|

**B‡jKU«bxq gZev` Abymv‡i,** RviY n‡”Q B‡jKU«b `vb c«wµqv Ges weRviY n‡”Q B‡jKU«b M«nY c«wµqv|

**RviYt 2Na** (weRviK) **⟶** **2Na**++ **2e−**

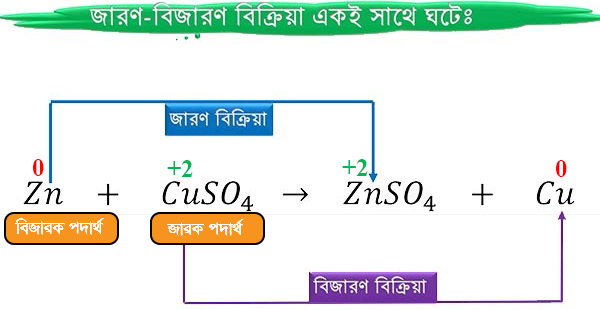
**weRviYt** **Cl2** (RviK) + **2e**− **⟶ 2Cl−**

(+) K‡i,

**2Na** + **Cl2 ⟶ 2Na+Cl−** ev, **2NaCl**

G wewµqvq ‡K¬vwib ‡mvwWqvg‡K RvwiZ K‡i **NaCl** G cwiYZ K‡i| wewµqvKv‡j c«‡Z¨K **Na** cigvYy GKwU K‡i B‡jKU«b `vb K‡i| **Kv‡RB GwU GKwU RviY c«wµqv|** Avevi c«‡Z¨K **Cl** cigvYy GKwU GKwU K‡i B‡jKU«b M«nY K‡i| **myZivs ‡K¬vwib RviK c`v\_©| weRvi‡Yi msÁv g‡Z, weRviY c«wµqv n‡”Q B‡jKU«b M«nY c«wµqv| ‡h‡nZy wewµqvKv‡j ‡K¬vwib B‡jKU«b M«nY K‡i ‡m‡nZy RviK c`v\_© RviYKv‡j wb‡R weRvwiZ n‡q hvq|**

Avevi, ‡mvwWqvg ‡K¬vwib‡K weRvwiZ K‡i **NaCl** G cwiYZ K‡i| GwU GKwU weRviY wewµqv| KviY, wewµqvKv‡j ‡K¬vwib cigvYy B‡jKU«b M«nY K‡i| **Na** weRviK c`v\_© KviY Bnv B‡jKU«b `vb K‡i, Rvi‡Yi mÁv g‡Z, RviY c«wµqv n‡”Q B‡jKU«b `vb c«wµqv| ‡h‡nZy ‡mvwWqvg B‡jKU«b `vb K‡i ‡m‡nZy weRviK c`v\_© weRviYKv‡j wb‡R RvwiZ n‡q hvq| myZivs ‡`Lv hvq ‡h, RviK c`v\_© RviYKv‡j wb‡R weRvwiZ n‡q hvq Ges weRviK c`v\_© weRviYKv‡j wb‡R RvwiZ n‡q hvq| A\_©vr RviY Qvov weRviY Ges weRviY Qvov ïaygvÎ RviY msNwUZ nq bv, myZivs RviY I weRviY hyMcr msNwUZ nq|

**GKbR‡i RviY-weRviY,**

**1. RviY-wewµqv: RviY gvb ‡e‡o ‡M‡j A\_©vr, e-‡Q‡o w`‡j ev Z¨vM Ki‡j**|

**2. weRviY-wewµqv: RviY gvb K‡g ‡M‡j A\_©vr, e- M«nY Ki‡j**|

**gy³ Ae¯’vq RviY gvb ïb¨**

**RviY msL¨v wbY©‡qi wbqgt**

1| PvR© wbi‡c¶ ‡hŠ‡M Dnvi ‡gŠjmg~‡ni RviY msL¨vi exRMwYZxq ‡hvMdj k~Y¨ n‡e| Avq‡bi ‡ejvq GB ‡hvMdj Avq‡bi Pv‡R©i mgvb nq|

2| Aw·‡R‡bi RviY msL¨v **cvi A·vBW** -**1**, **mycviA·vBW** (**KO2**) **– ½** aiv nq, **A·vB‡W** -**2** aiv nq|

3| **¯^vfvweK gy³ Ae¯’vq** me ‡gŠ‡ji RviY **msL¨v k~Y¨|**

4| **AvšÍt n¨v‡jv‡Rb** ‡hŠMmg~‡n AwaKZi Zwor FYvZ¥K ‡gŠ‡ji RviY msL¨v -**1**.

5| **¶vixq avZymg~‡ni** RviY msL¨v +**1** Ges **g…r¶vi avZymg~‡**ni RviY msL¨v +**2**.

**KwZcq RviK-weRviK c`v‡\_©i D`vniY:**

|  |  |
| --- | --- |
| **RviY(weRviK c`v\_©: B‡jKU«b `vbKvix)** | **weRviY(RviK c`v\_© : B‡jKU«b M«nYKvix)** |
| 1. Fe2+ → Fe3+ + e− (FeSO4,FeCl2) | 1. Fe3+ + e− → Fe2+ (FeCl3) |
| 2. Sn2+ → Sn4+ + 2e− (SnCl2) | 2. Sn4+ + 2e− → Sn2+ |
| 3. 2I− → I2 + 2e− (KI) | 3. + 2e− → 2O2− |
| 4. C2**(A·v‡jU Avqb)** → 2CO2 + 2e− (H2​C2​O4​, Na2​C2​O4​) | 4. Mn + 5e- → Mn2+ (KMnO4​) |
| 5. 2S2**(\_v‡qvmvj‡dU Avqb)** →S4 + 2e− (Na2​S2​O3​)  **(‡UU«v\_v‡qv‡bU Avqb)** | 5. Cr2 + 6e- → 2Cr3+ (K2​Cr2​O7​) |
| 6. S2− → S + 2e− (H2S) | 6. I2 + 2e− → 2I− |
| 7. O2 → O2 + 2e− | 7. Cu2+ + e− → Cu+    (CuSO4) |
|  | |
| Z‡e, MnO4 ¶vixq gva¨‡g MnO4 Ges wbi‡c¶ gva¨‡g MnO2 G cwieZ©b nq, Ges Mn Gi RviYmsL¨v h\_vµ‡g **+6** Ges **+4** nq| | |

**1) c«kœt Avqb-B‡jKU«b c×wZ‡Z wb‡gœi mgxKiwU Rvib-weRvib Aa©wewµqvi gva¨‡g c«Kvk Ki|**

6Fe2++ 14H+ + Cr2 **⟶** 6Fe3+ + 2Cr3+

**A\_ev, A¤øxq cUvwmqvg WvB-‡µv‡g‡Ui mv‡\_ ‡divm je‡Yi wewµqvwU Rvib-weRvib Aa©wewµqvi mvnv‡h¨ mgZv mn ‡`LvI|**

**A\_ev, Avqb-B‡jKU«b c×wZ‡Z wbgœwjwLZ ivmvqwbK mgxKiYwU mgZv weavb Ki Ges Rvib-weRvib Aa©mgxKiY ‡`LvI|**

FeSO4 + K2Cr2O7 + H2SO4 **⟶** Fe2(SO4)3 + Cr2(SO4)3 + K2SO4 + 7H2O

**RviYgvb-** +2 +6 +3 +3

**[mgvK…Z mgxt** 6FeSO4 + K2Cr2O7 + 7H2SO4 → 3Fe2(SO4)3 + Cr2(SO4)3 + K2SO4 + 7H2O**]**

**DËit G‡¶‡Î** K2Cr2O7 **RviK Ges** FeSO4 **weRviK A\_ev,** Cr2 **RviK,** Fe2+ **weRviK|**

**RviY Aa©wewµqvt** Fe2+ → Fe3+ + e−  ----------------------(i)

**weRviY Aa©wewµqvt** Cr2 + 14H+ + 6e− → 2Cr3+ + 7H2O ----------------(ii)

**mgxKiY (**i)**) ‡K 6 Øviv ¸Y K‡i (**ii**) Gi mv‡\_ ‡hvM Kwi -**

6Fe2+ → 6Fe3+ + 6e−

Cr2 + 14H+ + 6e− → 2Cr3+ + 7H20

6Fe2+ + Cr2 + 14H+ → 6Fe3+ + 2Cr3+ + 7H2O

**c«‡qvRbxq `k©K Avqb hy³ K‡i cvB,**

6FeSO4 + K2Cr2O7 + 7H2SO4 → 3Fe2(SO4)3 + Cr2(SO4)3 + K2SO4 + 7H2O

**BnvB wb‡Y©q mgvZK…Z mgxKiY|**

**2) c«kœt Avqb-B‡jKU«b c×wZ‡Z wb‡gœi mgxKiwU Rvib-weRvib Aa©wewµqvi gva¨‡g c«Kvk Ki|**

Cr2 + 6I− + 14H+ → Cr3+ + 3I2+ 7H2O

**A\_ev, A¤øxq gva¨‡g cUvwmqvg WvB-‡µv‡gU I Av‡qvWvBU je‡Yi wewµqvwU Rvib-weRvib Aa©wewµqvi mvnv‡h¨ mgZv mn wjL|**

**A\_ev, Avqb-B‡jKU«b c×wZ‡Z wbgœwjwLZ ivmvqwbK mgxKiYwU mgZv weavb Ki Ges Rvib-weRvib Aa©mgxKiY ‡`LvI|**

K2Cr2O7 + KI + H2SO4 → Cr2(SO4)3 + K2SO4 + 7H2O + 3I 2

**RviYgvb-** +6 -1 +3 +0

**[mgvK…Z mgxt** K2Cr2O7 + 6KI + 7H2SO4 → Cr2(SO4)3 + 4K2SO4 + 7H2O + 3I 2**]**

**DËit G‡¶‡Î** K2Cr2O7 **RviK I** KI **weRviK, A\_ev** Cr2 **RviK** I- **weRviK|**

**RviY Aa©wewµqvt** 2I−→ I2 + 2e− ----------------------(i)

**weRviY Aa©wewµqvt** Cr2 + 14H+ + 6e− → 2Cr3+ + 7H2O ---------------(ii)

**mgxKiY (**i)**) ‡K 3 Øviv ¸Y K‡i (**ii**) Gi mv‡\_ ‡hvM Kwi -**

6I−→ 3I2 + 6e−

Cr2 + 14H+ + 6e− → 2Cr3+ + 7H2O

Cr2 + 6I− + 14H+ → 2Cr3+ + 3I2 + 7H2O

**c«‡qvRbxq `k©K Avqb hy³ K‡i cvB,**

K2Cr2O7 + 6KI + 7H2SO4 → Cr2(SO4)3 + 4K2SO4 + 7H2O + 3I 2

**BnvB wb‡Y©q mgvZK…Z mgxKiY|**

**3) c«kœt Avqb-B‡jKU«b c×wZ‡Z wb‡gœi mgxKiwU Rvib-weRvib Aa©wewµqvi gva¨‡g c«Kvk Ki|**

Cr2 + 3S2− + 14H+ → 2Cr3+ + 3S + 7H2O

**A\_ev, A¤øxq gva¨‡g cUvwmqvg WvB-‡µv‡gU I nvB‡W«v‡Rb mvj‡d‡Ui wewµqvwU Rvib-weRvib Aa©wewµqvi mvnv‡h¨ mgZv mn wjL|**

**A\_ev, Avqb-B‡jKU«b c×wZ‡Z wbgœwjwLZ ivmvqwbK mgxKiYwU mgZv weavb Ki Ges Rvib-weRvib Aa©mgxKiY ‡`LvI|**

K2Cr2O7 + H2SO4 + H2S → K2SO4 + Cr2(SO4)3 + H2O + S

**RviYgvb-** +6 -2 +3 +0

**[mgvK…Z mgxt**  K2Cr2O7 + 4H2SO4 + 3H2S → K2SO4 + Cr2(SO4)3 + 7H2O + 3S**]**

**DËit G‡¶‡Î** K2Cr2O7 **RviK I** H2S **weRviK, A\_ev** Cr2 **RviK** S2− **weRviK|**

**RviY Aa©wewµqvt** S2− → S + 2e− ----------------------(i)

**weRviY Aa©wewµqvt** Cr2 + 14H+ + 6e− → 2Cr3+ + 7H2O -------------------(ii)

**mgxKiY (**i)**) ‡K 3 Øviv ¸Y K‡i (**ii**) Gi mv‡\_ ‡hvM Kwi -**

3S2− → 3S + 6e−

Cr2 + 14H+ + 6e− → 2Cr3+ + 7H2O

3S2− + Cr2 + 14H+ → 3S + 2Cr3+ + 7H2O

**c«‡qvRbxq `k©K Avqb hy³ K‡i cvB,**

K2Cr2O7 + 4H2SO4 + 3H2S → K2SO4 + Cr2(SO4)3 + 7H2O + 3S

**BnvB wb‡Y©q mgvZK…Z mgxKiY|**

**4) c«kœt Avqb-B‡jKU«b c×wZ‡Z wb‡gœi mgxKiwU Rvib-weRvib Aa©wewµqvi gva¨‡g c«Kvk Ki|**

Cr2 + + 14H+ → 2Cr3+ + O2 + 7H2O

**A\_ev, A¤øxq gva¨‡g cUvwmqvg WvB-‡µv‡gU I nvB‡W«v‡Rb cviA·vB‡Wi wewµqvwU Rvib-weRvib Aa©wewµqvi mvnv‡h¨ mgZv mn wjL|**

**A\_ev, Avqb-B‡jKU«b c×wZ‡Z wbgœwjwLZ ivmvqwbK mgxKiYwU mgZv weavb Ki Ges Rvib-weRvib Aa©mgxKiY ‡`LvI|**

K2Cr2O7 + H2SO4 + H2O2→ K2SO4 + Cr2(SO4)3 + H2O + O2

**RviYgvb-** +6 -2 +3 +0

**[mgvK…Z mgxt**  K2Cr2O7 + 4H2SO4 + 3H2O2 → K2SO4 + Cr2(SO4)3 + 7H2O + 3O2**]**

**DËit G‡¶‡Î** K2Cr2O7 **RviK I** H2O2 **weRviK, A\_ev** Cr2 **RviK** O2- **weRviK|**

**RviY Aa©wewµqvt** → O2 + 2e− ----------------------(i)

**weRviY Aa©wewµqvt** Cr2 + 14H+ + 6e− → 2Cr3+ + 7H2O -----------------(ii)

**mgxKiY (**i)**) ‡K 3 Øviv ¸Y K‡i (**ii**) Gi mv‡\_ ‡hvM Kwi -**

3 → 3O2 + 6e−

Cr2 + 14H+ + 6e− → 2Cr3+ + 7H20

3 + Cr2 + 14H+ → 2Cr3+ + 3O2 + 7H2O

**c«‡qvRbxq `k©K Avqb hy³ K‡i cvB,**

K2Cr2O7 + 4H2SO4 + 3H2O2 → K2SO4 + Cr2(SO4)3 + 7H2O + 3O2

**BnvB wb‡Y©q mgvZK…Z mgxKiY|**

**5) c«kœt Avqb-B‡jKU«b c×wZ‡Z wb‡gœi mgxKiwU Rvib-weRvib Aa©wewµqvi gva¨‡g c«Kvk Ki|**

Cr2 + C2 + 14H+ → 2Cr3+ + 2CO2 + 7H2O

**A\_ev, A¤øxq gva¨‡g cUvwmqvg WvB-‡µv‡gU I A·vwjwK Gwm‡Wi wewµqvwU Rvib-weRvib Aa©wewµqvi mvnv‡h¨ mgZv mn wjL|**

**A\_ev, Avqb-B‡jKU«b c×wZ‡Z wbgœwjwLZ ivmvqwbK mgxKiYwU mgZv weavb Ki Ges Rvib-weRvib Aa©mgxKiY ‡`LvI|**

K2Cr2O7 + H2SO4 + H2C2O4→ K2SO4 + Cr2(SO4)3 + 2CO2 + H2O

**RviYgvb-** +6 +3 +3 +4

**[mgvK…Z mgxt**  K2Cr2O7 + 3H2C2O4 + 4H2SO4 → K2SO4 + Cr2(SO4)3 +6CO2 +7H2O**]**

**DËit G‡¶‡Î** K2Cr2O7 **RviK I** C2 **weRviK, A\_ev** Cr2 **RviK** C2 **weRviK|**

**RviY Aa©wewµqvt** C2 → 2CO2 + 2e− ----------------------(i)

**weRviY Aa©wewµqvt** Cr2 + 14H+ + 6e− → 2Cr3+ + 7H2O -------------------(ii)

**mgxKiY (**i)**) ‡K 3 Øviv ¸Y K‡i (**ii**) Gi mv‡\_ ‡hvM Kwi -**

3C2 → 6CO2 + 6e−

Cr2 + 14H+ + 6e− → 2Cr3+ + 7H2O

3C2+ Cr2 + 14H+ → 2Cr3+ + 6CO2 + 7H2O

**c«‡qvRbxq `k©K Avqb hy³ K‡i cvB,**

K2Cr2O7 + 3H2C2O4 + 4H2SO4 → K2SO4 + Cr2(SO4)3 +6CO2 + 7H2O

**BnvB wb‡Y©q mgvZK…Z mgxKiY|**

**6) c«kœt Avqb-B‡jKU«b c×wZ‡Z wb‡gœi mgxKiwU Rvib-weRvib Aa©wewµqvi gva¨‡g c«Kvk Ki|**

Mn + 2Fe2+ + 8H+ → 2Fe3+ + Mn2+ + 4H2O

**A\_ev, A¤øxq cUvwmqvg cvig¨v½v‡b‡Ui mv‡\_ ‡divm je‡Yi wewµqvwU Rvib-weRvib Aa©wewµqvi mvnv‡h¨ mgZv mn ‡`LvI|**

**A\_ev, Avqb-B‡jKU«b c×wZ‡Z wbgœwjwLZ ivmvqwbK mgxKiYwU mgZv weavb Ki Ges Rvib-weRvib Aa©mgxKiY ‡`LvI|**

FeSO4 + KMnO4 + H2SO4 → Fe2(SO4)3 + MnSO4 + K2SO4 + 4H2O

**RviYgvb-** +2 +7 +3 +2

**[mgvK…Z mgxt** 10FeSO4+2KMnO4+8H2SO4→5Fe2(SO4)3+2MnSO4 + K2SO4 +8H2O**]**

**DËit G‡¶‡Î** KMnO4 **RviK I** FeSO4 **weRviK A\_ev,** Mn **RviK** Fe2+ **weRviK|**

**RviY Aa©wewµqvt** Fe2+ → Fe3+ + e− ---------------------- (i)

**weRviY Aa©wewµqvt** Mn + 8H+ + 5e− → Mn2+ + 4H2O ----------------------(ii)

**mgxKiY (**i) **‡K 10 Øviv ¸Y K‡i (**ii**) ‡K 2 Øviv ¸Y K‡i Gi mv‡\_ ‡hvM Kwi -**

10Fe2+→ 10Fe3+ + 10e−

2Mn + 16H+ + 10e− → 2Mn2+ + 8H20

10Fe2+ + 2Mn + 16H+ → 10Fe3+ + 2Mn2+ + 8H20

**c«‡qvRbxq `k©K Avqb hy³ K‡i cvB,**

10FeSO4 + 2KMnO4 + 8H2SO4 → 5Fe2(SO4)3 + 2MnSO4 + K2SO4 + 8H2O

**BnvB wb‡Y©q mgvZK…Z mgxKiY|**

**7) c«kœt Avqb-B‡jKU«b c×wZ‡Z wb‡gœi mgxKiwU Rvib-weRvib Aa©wewµqvi gva¨‡g c«Kvk Ki|**

Mn + 6I− + 14H+ → Mn2+ + 3I2+ 7H2O

**A\_ev, A¤øxq cUvwmqvg cvig¨v½v‡b‡Ui mv‡\_ Av‡qvWvBW je‡Yi wewµqvwU Rvib-weRvib Aa©wewµqvi mvnv‡h¨ mgZv mn ‡`LvI|**

**A\_ev, Avqb-B‡jKU«b c×wZ‡Z wbgœwjwLZ ivmvqwbK mgxKiYwU mgZv weavb Ki Ges Rvib-weRvib Aa©mgxKiY ‡`LvI|**

KMnO4 + KI + H2SO4 → MnSO4 + K2SO4 + 3I2 + 8H2O

**RviYgvb-** +7 -1 +2 +0

**[mgvK…Z mgxt** 2KMnO4 + 10KI + 8H2SO4 → 2MnSO4 + 5K2SO4 + 5I2 + 8H2O**]**

**DËit G‡¶‡Î** KMnO4 **RviK I** KI**weRviK A\_ev,** Mn **RviK** I- **weRviK|**

**RviY Aa©wewµqvt** 2I− → I2 + 2e− ---------------------- (i)

**weRviY Aa©wewµqvt** Mn + 8H+ + 5e− → Mn2+ + 4H2O ----------------------(ii)

**mgxKiY (**i) **‡K 10 Øviv ¸Y K‡i (**ii**) ‡K 2 Øviv ¸Y K‡i Gi mv‡\_ ‡hvM Kwi -**

10I− → 5I2 + 10e−

2Mn + 16H+ + 10e− → 2Mn2+ + 8H20

10I− + 2Mn + 16H+ → 5I2+ 2Mn2+ + 8H20

**c«‡qvRbxq `k©K Avqb hy³ K‡i cvB,**

2KMnO4 + 10KI + 8H2SO4 → 2MnSO4 + 6K2SO4 + 5I2 + 8H2O

**BnvB wb‡Y©q mgvZK…Z mgxKiY|**

**8) c«kœt Avqb-B‡jKU«b c×wZ‡Z wb‡gœi mgxKiwU Rvib-weRvib Aa©wewµqvi gva¨‡g c«Kvk Ki|**

Mn + 3S2− + 14H+ → Cr3+ + 3S+ 4H2O

**A\_ev, A¤øxq A¤­xq cUvwmqvg cvig¨v½v‡b‡Ui mv‡\_ nvB‡W«v‡Rb mvjdvB‡Wi wewµqvwU Rvib-weRvib Aa©wewµqvi mvnv‡h¨ mgZv mn ‡`LvI|**

**A\_ev, Avqb-B‡jKU«b c×wZ‡Z wbgœwjwLZ ivmvqwbK mgxKiYwU mgZv weavb Ki Ges Rvib-weRvib Aa©mgxKiY ‡`LvI|**

KMnO4 + H2S + H2SO4 → MnSO4 + K2SO4 + S + 4H2O

**RviYgvb-** +7 -1 +2 +0

**[mgvK…Z mgxt** 2KMnO4 + 5H2S + 3H2SO4 → 2MnSO4 + K2SO4 + 5S + 8H2O**]**

**DËit G‡¶‡Î** KMnO4 **RviK I** H2S **weRviK A\_ev,** Mn **RviK** S2− **weRviK|**

**RviY Aa©wewµqvt** S2− → S + 2e− ---------------------- (i)

**weRviY Aa©wewµqvt** Mn + 8H+ + 5e− → Mn2+ + 4H2O ----------------------(ii)

**mgxKiY (**i) **‡K 5 Øviv ¸Y K‡i (**ii**) ‡K 2 Øviv ¸Y K‡i Gi mv‡\_ ‡hvM Kwi -**

5S2− → 5S + 10e−

2Mn + 16H+ + 10e− → 2Mn2+ + 8H20

5S2− + 2Mn + 16H+ → 5S + 2Mn2+ + 8H20

**c«‡qvRbxq `k©K Avqb hy³ K‡i cvB,**

2KMnO4 + 5H2S + 3H2SO4 → 2MnSO4 + K2SO4 + 5S + 8H2O

**BnvB wb‡Y©q mgvZK…Z mgxKiY|**

**9) c«kœt Avqb-B‡jKU«b c×wZ‡Z wb‡gœi mgxKiwU Rvib-weRvib Aa©wewµqvi gva¨‡g c«Kvk Ki|**

Mn + → Mn2+ + O2+ 4H2O

**A\_ev, A¤øxq cUvwmqvg cvig¨v½v‡b‡Ui mv‡\_ nvB‡W«v‡Rb mvjdvB‡Wi wewµqvwU Rvib-weRvib Aa©wewµqvi mvnv‡h¨ mgZv mn ‡`LvI|**

**A\_ev, Avqb-B‡jKU«b c×wZ‡Z wbgœwjwLZ ivmvqwbK mgxKiYwU mgZv weavb Ki Ges Rvib-weRvib**

**Aa©mgxKiY ‡`LvI|**

KMnO4 + H2O2 + H2SO4 → MnSO4 + K2SO4 + O2 + 4H2O

**RviYgvb-** +7 -1 +2 +0

**[mgvK…Z mgxt** 2KMnO4 + 5H2O2 + 3H2SO4 → 2MnSO4 + K2SO4 +5O2 + 8H2O**]**

**DËit G‡¶‡Î** KMnO4 **RviK I** H2O2 **weRviK A\_ev,** Mn **RviK** **weRviK|**

**RviY Aa©wewµqvt**  → O2 + 2e− ---------------------- (i)

**weRviY Aa©wewµqvt** Mn + 8H+ + 5e− → Mn2+ + 4H2O ----------------------(ii)

**mgxKiY (**i) **‡K 10 Øviv ¸Y K‡i (**ii**) ‡K 2 Øviv ¸Y K‡i Gi mv‡\_ ‡hvM Kwi -**

5 → 5O2 + 10e−

2Mn + 16H+ + 10e− → 2Mn2+ + 8H20

5+ 2Mn + 16H+ → 5O2 + 2Mn2+ + 8H20

**c«‡qvRbxq `k©K Avqb hy³ K‡i cvB,**

2KMnO4 + 5H2O2 + 3H2SO4 → 2MnSO4 + K2SO4 +5O2 + 8H2O

**BnvB wb‡Y©q mgvZK…Z mgxKiY|**

**10) c«kœt Avqb-B‡jKU«b c×wZ‡Z wb‡gœi mgxKiwU Rvib-weRvib Aa©wewµqvi gva¨‡g c«Kvk Ki|**

Mn + C2 → Mn2+ + 2CO2+ 4H2O

**A\_ev, A¤øxq cUvwmqvg cvig¨v½v‡b‡Ui mv‡\_ A·vwjK Gwm‡Wi wewµqvwU Rvib-weRvib Aa©wewµqvi mvnv‡h¨ mgZv mn ‡`LvI|**

**A\_ev, Avqb-B‡jKU«b c×wZ‡Z wbgœwjwLZ ivmvqwbK mgxKiYwU mgZv weavb Ki Ges Rvib-weRvib Aa©mgxKiY `vI|**

KMnO4 + H2C2O4 + H2SO4 → MnSO4 + K2SO4 + 2CO2 + 4H2O

**RviYgvb-** +7 -3 +2 +4

**[mgvK…Z mgxt** 2KMnO4 + 5H2C2O4 + 3H2SO4 →2MnSO4 + K2SO4 + 10CO2 + 8H2O**]**

**DËit G‡¶‡Î** KMnO4 **RviK I** H2C2O4 **weRviK A\_ev,** Mn **RviK** C2**weRviK|**

**RviY Aa©wewµqvt** C2 → 2CO2 + 2e− ---------------------- (i)

**weRviY Aa©wewµqvt** Mn + 8H+ + 5e− → Mn2+ + 4H2O ----------------------(ii)

**mgxKiY (**i) **‡K 5 Øviv ¸Y K‡i (**ii**) ‡K 2 Øviv ¸Y K‡i Gi mv‡\_ ‡hvM Kwi -**

5C2 → 10CO2 + 10e−

2Mn + 16H+ + 10e− → 2Mn2+ + 8H20

5C2+ 2Mn + 16H+ → 10CO2 + 2Mn2+ + 8H20

**c«‡qvRbxq `k©K Avqb hy³ K‡i cvB,**

2KMnO4 + 5H2C2O4 + 3H2SO4 → 2MnSO4 + K2SO4 + 10CO2 + 8H2O

**BnvB wb‡Y©q mgvZK…Z mgxKiY|**

**11) c«kœt Avqb-B‡jKU«b c×wZ‡Z wb‡gœi mgxKiwU Rvib-weRvib Aa©wewµqvi gva¨‡g c«Kvk Ki|**

Cr2 + 6I− + 14H → Cr3+ + 3I2+ 7H2O

**A\_ev, A¤øxq gva¨‡g cUvwmqvg WvB-‡µv‡gU I Av‡qvWvBW je‡Yi Rvib-weRvib Aa©wewµqvi mvnv‡h¨ mgZv mn wjL|**

**A\_ev, Avqb-B‡jKU«b c×wZ‡Z wbgœwjwLZ ivmvqwbK mgxKiYwU mgZv weavb Ki Ges Rvib-weRvib Aa©mgxKiY ‡`LvI|**

K2Cr2O7 + KI + HCI → CrCl3 + KCI + 7H2O + I2

**RviYgvb-** +6 -1 +3 +0

**[mgvK…Z mgxt** K2Cr2O7 + 6KI + 14HCI → 2CrCl3 + 8KCI + 7H2O + 3I2**]**

**DËit G‡¶‡Î** K2Cr2O7 **RviK I** KI **weRviK A\_ev,** Cr2 **RviK** I− **weRviK|**

**RviY Aa©wewµqvt** 2I− → I2 + 2e− ---------------------- (i)

**weRviY Aa©wewµqvt** Cr2 + 14H+ + 6e− → 2Cr3+ + 7H2O -------------------(ii)

**mgxKiY (**i) **‡K 3 Øviv ¸Y K‡i (**ii**) Gi mv‡\_ ‡hvM Kwi -**

6I− → 3I2 + 6e-

Cr2 + 14H+ + 6e- → 2Cr3+ + 7H2O

Cr2+ 6I− + 14H+ → 2Cr3+ + 3I2 + 7H20

**c«‡qvRbxq `k©K Avqb hy³ K‡i cvB,**

K2Cr2O7 + 6KI + 14HCI → 2CrCl3 + 8KCI + 7H2O + 3I2

**BnvB wb‡Y©q mgvZK…Z mgxKiY|**