Class 10 Science Notes

(Hindi / Hinglish Medium for Easy Understanding)

Based on the Latest Exam Pattern and Syllabus

Note to Students: To ensure maximum compatibility across all mobile devices and PDF readers without font errors, these notes are provided in **Romanized Hindi (Hinglish)** alongside English terminology. This format helps Hindi-medium students grasp core concepts quickly while preparing them for board exams.

1 Chapter 1: Chemical Reactions and Equations (Rasayanik Abhikriyayein aur Samikaran)

1. Rasayanik Abhikriya (Chemical Reaction) Kya Hai?

Jab do ya do se adhik padarth (substances) aapas mein milkar ek naye gun-dharm (properties) wale padarth ka nirman karte hain, toh use rasayanik abhikriya kehte hain.

- **Udaharan (Examples):** Lohe par jang lagna (Rusting of iron), Dudh se dahi banna (Curdling of milk), aur Shwasan (Respiration).
- **Abhikarak (Reactants):** Jo padarth reaction mein bhag lete hain.
- **Utpad (Products):** Reaction ke baad banne wale naye padarth.

2. Rasayanik Abhikriya ke Prakar (Types of Chemical Reactions)

1. **Sanyojan Abhikriya (Combination Reaction):** Jab do ya adhik abhikarak milkar ek single utpad (product) banate hain.

$$A + B \rightarrow AB$$

Example: Koyle ka dahan (Burning of coal): $C(s) + O_2(g) \rightarrow CO_2(g)$

2. **Viyojan Abhikriya (Decomposition Reaction):** Jab ek single abhikarak tootkar do ya adhik utpad banata hai.

$$AB \rightarrow A + B$$

Example: Calcium Carbonate ka tootna: $CaCO_3(s) \xrightarrow{\text{Heat}} CaO(s) + CO_2(g)$

3. **Visthapan Abhikriya (Displacement Reaction):** Jab ek adhik kriya-sheel (more reactive) tatva (element), kam kriya-sheel tatva ko uske yogik (compound) se hata deta hai.

$$Fe(s) + CuSO_4(aq) \rightarrow FeSO_4(aq) + Cu(s)$$

3. Ushmakshepi aur Ushmashoshi Abhikriyayein

- **Ushmakshepi (Exothermic):** Jin reactions mein utpad ke sath-sath heat (ushma) bhi nikalti hai. (e.g., Respiration).
- **Ushmashoshi (Endothermic):** Jin reactions mein heat (ushma) ka avshoshan (absorption) hota hai.

2 Chapter 2: Acids, Bases and Salts (Aml, Kshark aur Lavan)

1. Aml (Acids)

- Yeh swad mein khatte (sour) hote hain.
- Yeh Neele (Blue) Litmus paper ko Laal (Red) kar dete hain.
- Jaliya vilayan (aqueous solution) mein H^+ ions dete hain.
- **Udaharan:** Hydrochloric Acid (HCl), Sulphuric Acid (H_2SO_4), Nimbu ka ras (Citric acid).

2. Kshark (Bases)

- Yeh swad mein kadwe (bitter) hote hain.
- Yeh Laal (Red) Litmus paper ko Neela (Blue) kar dete hain.
- Jaliya vilayan mein OH^- ions dete hain.
- **Udaharan:** Sodium Hydroxide ($NaOH$), Potassium Hydroxide (KOH).

3. pH Scale

Kisi vilayan (solution) mein H^+ ion ki sandrata (concentration) mapne ke liye pH scale ka use hota hai.

- **pH = 7:** Udasin (Neutral) - jaise shuddh jal (pure water).
- **pH < 7:** Amliya (Acidic).
- **pH > 7:** Kshariya (Basic).

4. Mahatvapurna Lavan (Important Salts)

- **Bleaching Powder (Viranjak Churna):** $CaOCl_2$ - Pani ko saaf karne mein use hota hai.
- **Baking Soda (Khane ka Soda):** $NaHCO_3$ - Bakery items banane mein.
- **Washing Soda (Dhone ka Soda):** $Na_2CO_3 \cdot 10H_2O$ - Kapde dhone aur kanch udyog mein.
- **Plaster of Paris (POP):** $CaSO_4 \cdot \frac{1}{2}H_2O$ - Tooti haddiyo (fractured bones) ko jodne aur khilone banane mein.

3 Chapter 6: Life Processes (Jaiv Prakram)

1. Poshan (Nutrition)

Jeevo dwara bhojan grahan karna aur uska upyog sharir ki vriddhi (growth) aur urja (energy) ke liye karna poshan kehlata hai.

- **Swaposhi Poshan (Autotrophic):** Harre paudhe (Green plants) Prakash Sanshleshan (Photosynthesis) dwara apna bhojan khud banate hain.
- **Vishamposhi Poshan (Heterotrophic):** Jeev jo apne bhojan ke liye dusro par nirbhar rehte hain (e.g., Humans, Animals).

2. Shwasan (Respiration)

Bhojan (Glucose) ko oxygen ki madad se todkar urja (ATP) prapt karne ki prakriya ko shwasan kehte hain.

- **Vayaviya Shwasan (Aerobic):** Oxygen ki upasthiti (presence) mein hota hai. Mitochondria mein hota hai.
- **Avayaviya Shwasan (Anaerobic):** Oxygen ki anupasthiti (absence) mein hota hai. Jaise Yeast mein.

3. Vahan (Transportation in Humans)

Manushya mein rakt (blood) ke dwara oxygen, bhojan aur waste materials ka parivahan hota hai.

- **Hriday (Heart):** Yeh ek pump ki tarah kaam karta hai jo pure sharir mein khoon bhejta hai.
- **Dhamni (Arteries):** Oxygen-yukt khoon ko heart se body tak le jati hain.
- **Shira (Veins):** Carbon dioxide-yukt khoon ko body se heart tak wapas laati hain.

4 Chapter 10: Light - Reflection and Refraction (Prakash - Paraavartan aur Apavartan)

1. Prakash ka Paraavartan (Reflection of Light)

Jab prakash ki kiran kisi chamkili satah (polished surface) se takrakar wapas usi madhyam (medium) mein laut aati hai, toh use Prakash ka Paraavartan kehte hain.

- **Paraavartan ke Niyam (Laws of Reflection):**
  1. Aapatan kon (Angle of Incidence, $\angle i$) hamesha Paraavartan kon (Angle of Reflection, $\angle r$) ke barabar hota hai. ($\angle i = \angle r$)
  2. Aapatit kiran (Incident ray), Paraavartit kiran (Reflected ray), aur Abhilambh (Normal) teeno ek hi tal (plane) mein hote hain.

2. Darpan Sutra (Mirror Formula)

Goliya darpan (Spherical mirrors) ke liye sutra:

$$\frac{1}{v} + \frac{1}{u} = \frac{1}{f} \tag{1}$$

Jahan:
v = Pratibimb ki doori (Image distance)
u = Bimb ki doori (Object distance)
f = Focus doori (Focal length)

3. Prakash ka Apavartan (Refraction of Light)

Jab prakash ek pardarshi madhyam (transparent medium) se dusre pardarshi madhyam mein jata hai, toh uski disha (direction) badal jati hai. Is ghatna ko Apavartan kehte hain.

4. Lens Sutra (Lens Formula)

$$\frac{1}{v} - \frac{1}{u} = \frac{1}{f} \tag{2}$$

5. Lens ki Kshamta (Power of a Lens)

Lens ki focus doori ke vyutkram (reciprocal) ko uski kshamta kehte hain. Iska SI matrak **Diopter (D)** hai.

$$P = \frac{1}{f(\text{in meters})} \tag{3}$$

5 Chapter 12: Electricity (Vidyut)

1. Vidyut Dhara (Electric Current)

Aavesh (charge) ke pravah ki dar (rate of flow) ko vidyut dhara kehte hain.

$$I = \frac{Q}{t} \tag{4}$$

Jahan I = Current (Ampere), Q = Charge (Coulomb), t = Time (Seconds).

2. Ohm ka Niyam (Ohm's Law)

Yadi tapman (temperature) saman rahe, toh kisi chalak (conductor) ke siro par utpann vibhavantar (Potential Difference, V) usme pravahit vidyut dhara (I) ke samanupati (directly proportional) hota hai.

$$V = I \times R \tag{5}$$

Jahan R = Pratirodh (Resistance), jiska matrak **Ohm** (Ω) hota hai.

3. Pratirodho ka Sanyojan (Combination of Resistors)

- **Shreni Kram (Series Combination):** $R_s = R_1 + R_2 + R_3$
- **Parshva Kram (Parallel Combination):** $\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$