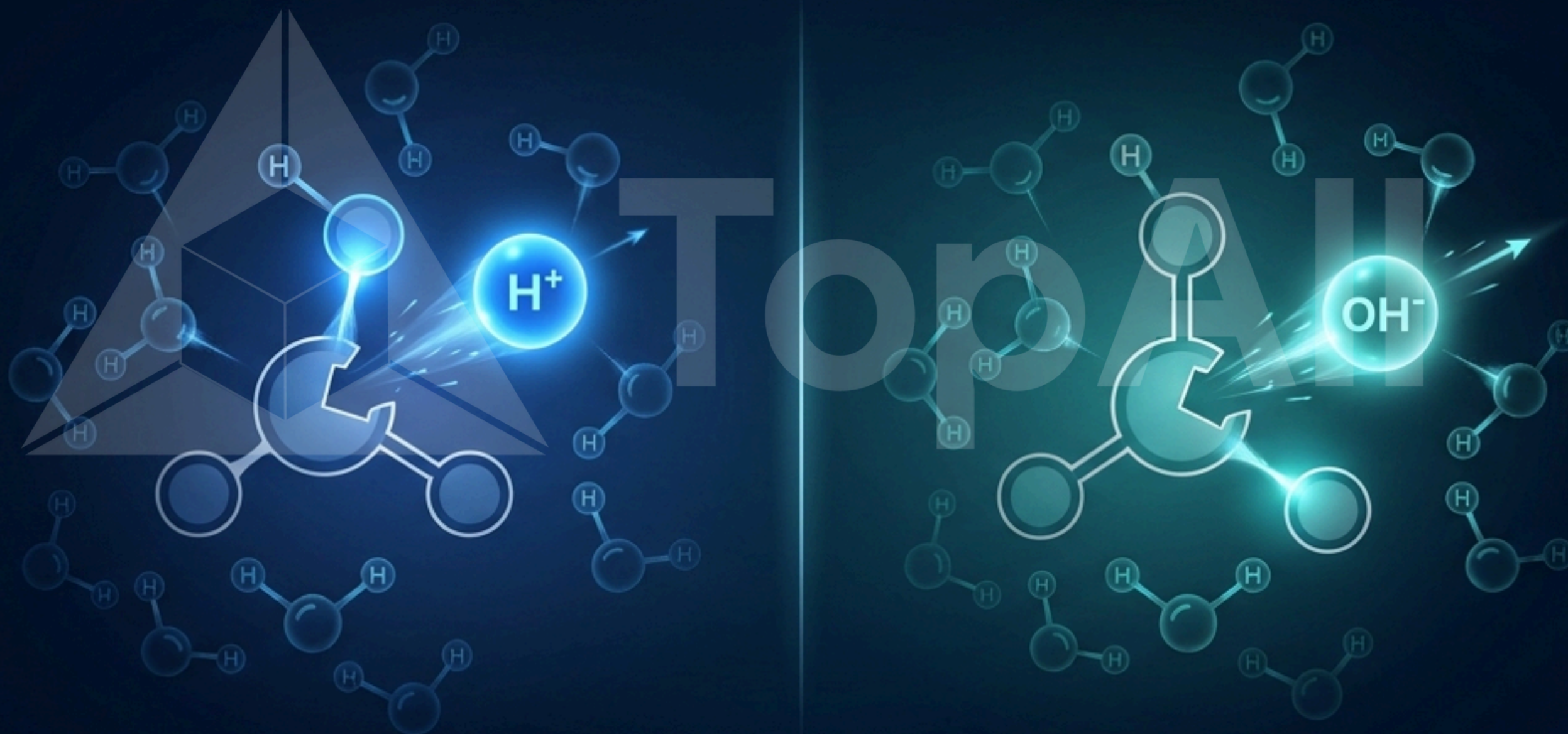


Acids and Bases Are About Ions



Mastering the Aqueous Arena for JEE



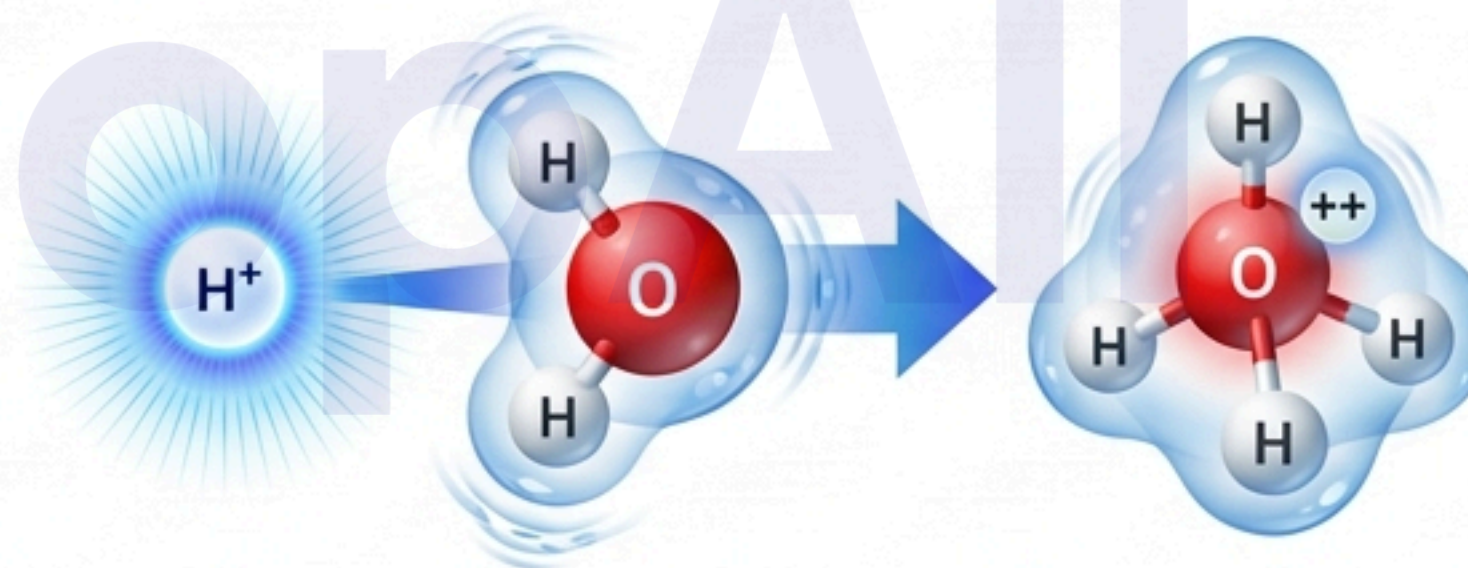
What Makes Something an Acid?

An acid is a substance that dissociates in water to produce Hydrogen ions.

Formula Bank Panel



The Bare Proton Problem

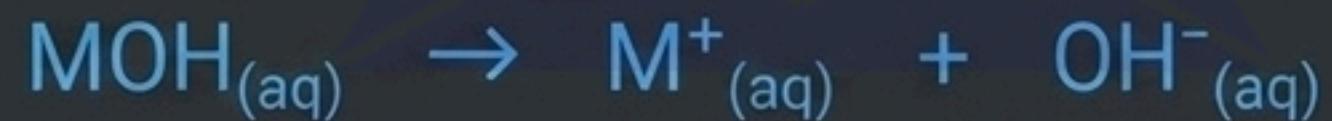


A **bare proton** is too reactive to exist freely;
it is instantly '**caged**' by water.

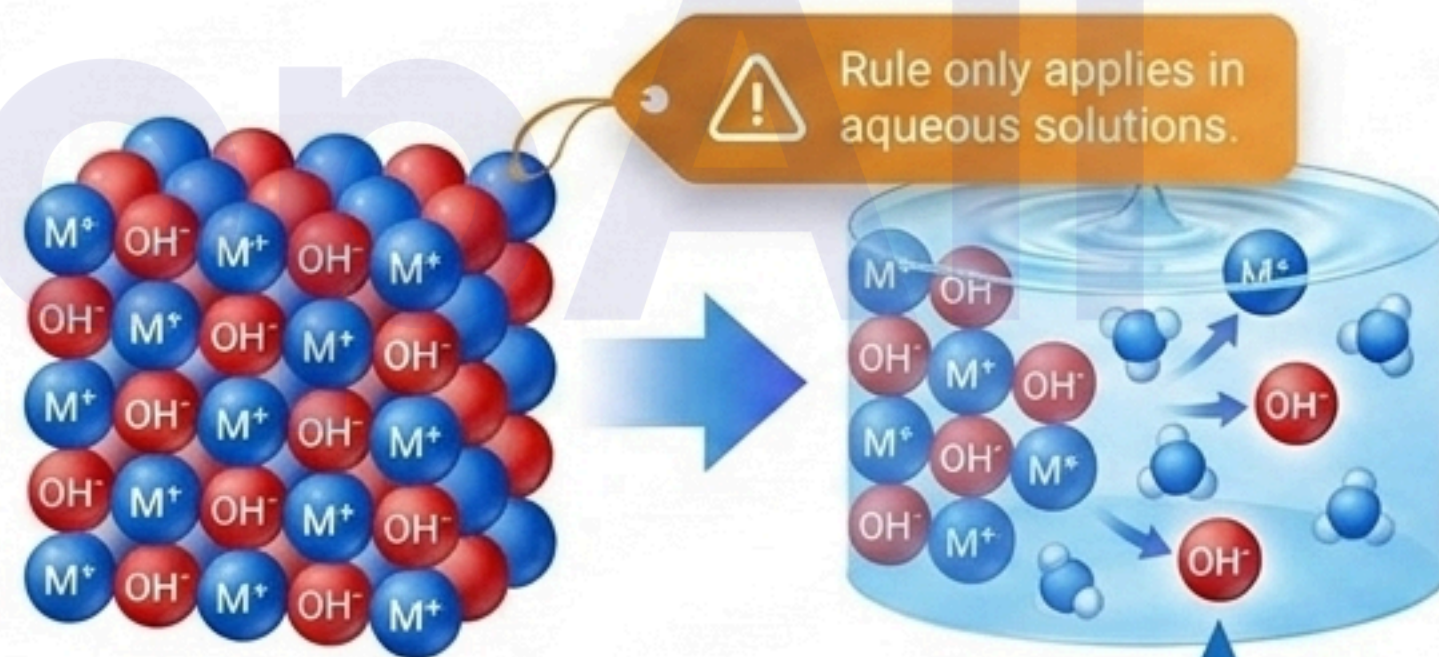
What Makes Something a Base?

A base produces Hydroxyl ions in an aqueous solution.

Formula Bank Panel



Aqueous Arena Limitation



Solid MOH

Hydroxyl ions also exist in hydrated forms (H_3O_2^- , H_5O_3^-).



You've Learned the Theory. Let's Test Them Now.

$$E=mc^2$$



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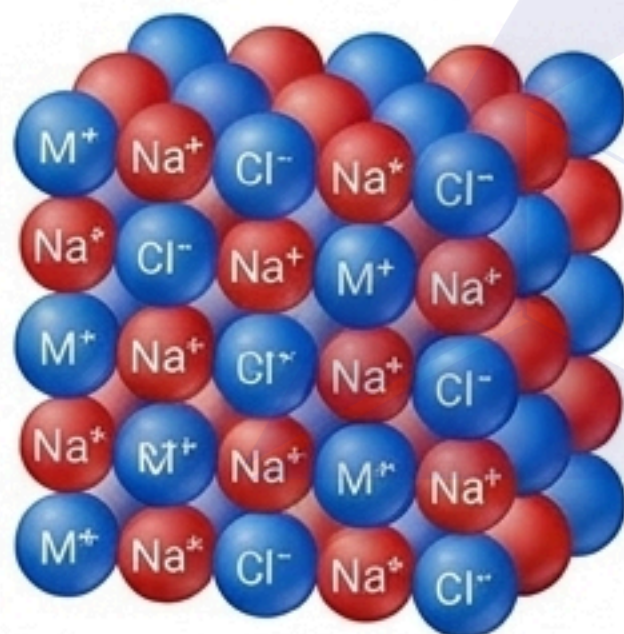
Key Highlights

- » Free Study Material, Videos & Infographics
- » Push Your Limits with Level-Based Challenges
- » Climb the Leaderboard Among Fellow Aspirants
- » Practice Unlimited MCQs for NEET & JEE
- » Get Clear Explanations, Not Just Marks
- » Track Your Performance Smarter



Salt Behaviour in Water

Step 1: Solid Crystal

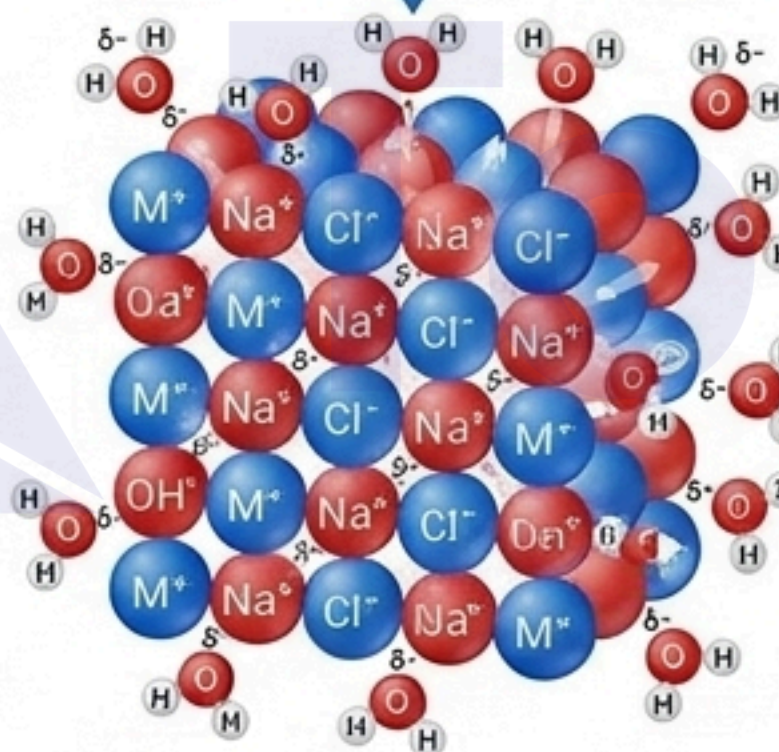


Step 1: Solid Crystal

Tight electrostatic grip between oppositely charged ions.

Step 2: High Dielectric Solvent

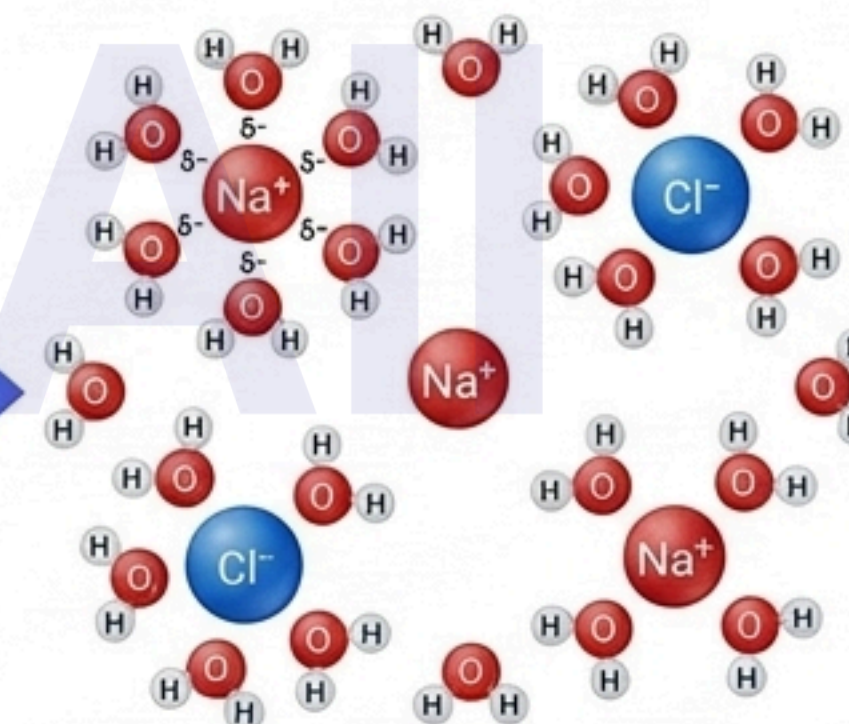
Water's dielectric constant = 80



Step 2: High Dielectric Solvent

Water's dielectric constant = 80

Step 3: Hydrated Free Ions



Step 3: Hydrated Free Ions

Electrostatic interactions reduced by 80x, ions move freely.

Strong vs. Weak Electrolytes

		Strong Acid/Base	Weak Acid/Base
1	Degree of Ionization	Almost 100% ($\alpha \approx 1$)	Partial ($\alpha < 1$)
2	Arrow Type	One-way highway $\rightarrow$	Two-way street (Equilibrium) $\rightleftharpoons$
3	Dominant Solution Species	Constituent Ions	Undissociated Molecules
4	Classic Examples	HCl, NaOH, HClO ₄	CH ₃ COOH, NH ₃

Strong



Weak



JEE Trap Alert: Beyond Arrhenius

The examiner will test where the basic rules fail.

The Trap:

A base must contain an OH group.

The Reality:

Ammonia (NH_3) has no OH, but acts as a base by accepting a proton (H^+).

[Brönsted-Lowry: Proton Acceptor]

The Trap:

An acid must have an H to donate.

The Reality:

Boron Trichloride (BCl_3) has no H, but acts as an acid by accepting a lone pair of electrons.

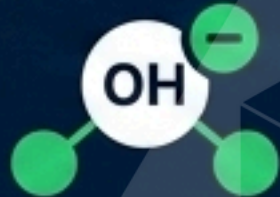
[Lewis: Electron Pair Acceptor]

The Exam Snapshot



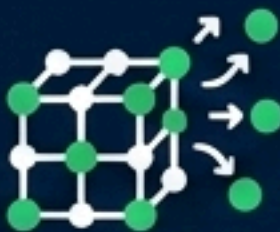
Acid → Proton / H⁺ Producer

(or Electron Pair Acceptor)



Base → Hydroxyl / OH⁻ Producer

(or Proton Acceptor / Electron Donor)



Salt → Ion Source

Electrostatic bonds broken by water's high dielectric constant ($\epsilon = 80$).



You've Learned the Theory.

Now Let's Test It.

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