

UPDAAN



2025

Bharat Mata Ki Jai♥

ACIDS, BASES AND SALTS

**

pH and Its Importance in Daily Life

CHEMISTRY

Lecture - 05

BY: SUNIL BHAIIYA



Topics

to be covered

- 1 Acidity and Alkanity in Terms of pH
- 2 Importance of pH in Everyday Life



CBSE QUESTION & CONCEPT BANK

Chapter-wise & Topic-wise

Includes Point-wise Answers with Step-wise Marking

CLASS 10th SCIENCE

Chapter-wise
CONCEPT MAPS

CBSE 2024-25 & NEP 2020
CURRICULUM BASED

Revision Blue Print & Solved Questions
COMPETENCY FOCUSED

CBSE 2024 & 2023 with Handwritten Solutions
LATEST CBSE PAPERS

As per Latest Pattern
MOCK TESTS

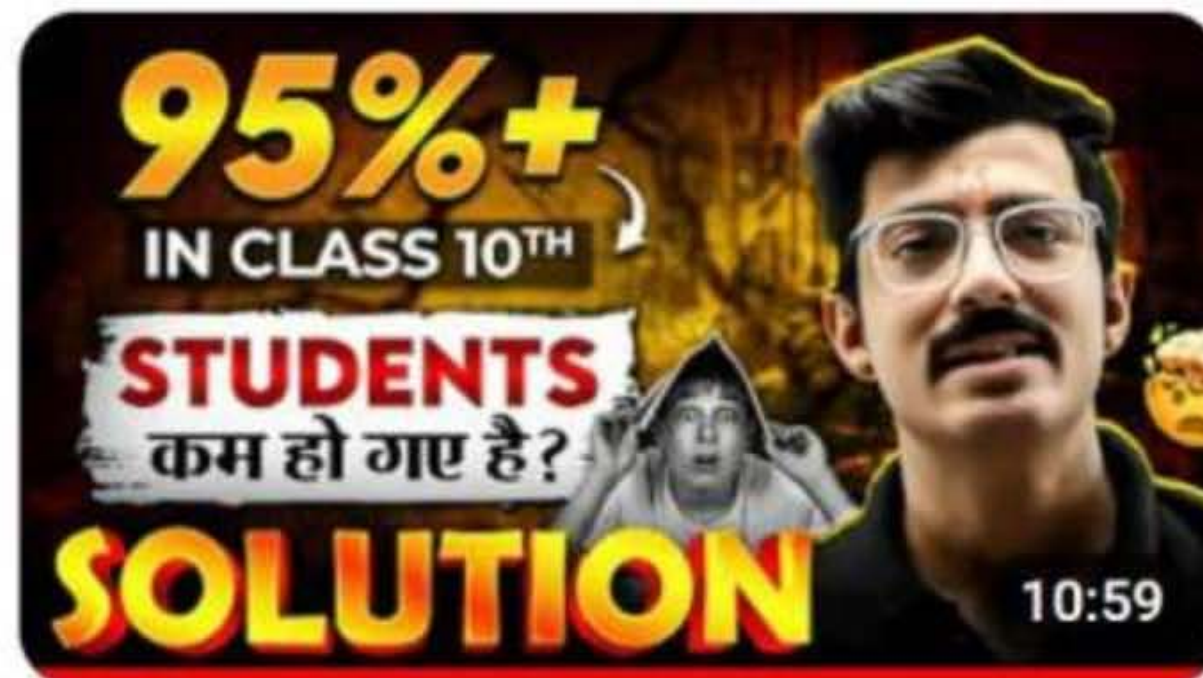
2025
EXAMINATION

✍ Rakshak Dua
✍ Samridhi Sharma
✍ Sunil Vijay Hingorani



Detailed Review and Importance of
the Book in One Video.

Channel: PW Foundation YouTube



Class 10th में 95%+ लाने वाले बच्चे घटे ?

🧐 Reason and Solution ☒

Knowledge Ride On



Acidity and Alkanity in Terms of pH ✓

Knowledge Ride On



(pH and Its Importance in Daily Life) ✓

Knowledge Ride On



Insaniyat Ka Gyaan ✓



Can you decode the below puzzle?



OLD

= GOLD (Au)



Can you decode the below puzzle?



= GOLD (Au)

Pyare Bacche Be Like





Let's Practice



PW Ka **ChemStar!**

Q.

Question

(NCERT Exemplar)

can be
corrosive



If a few drops of a concentrated acid accidentally spills over the hand of a student, what should be done?

A Wash the hand with saline solution (x)
↳ NaCl in water

B ✓ Wash the hand immediately with plenty of water and apply a paste of sodium hydrogencarbonate → (mild base which is non-corrosive)
↳ neutralise the remaining acid on hand

C ✓ After washing with plenty of water apply solution of sodium hydroxide on the hand
NaOH → 'corrosive'

D Neutralise the acid with a strong alkali (x)



Ek Sawaal Aur...



Strong acid, weak acid?
strong base, weak base?

Does an acid-base indicator give any information about the strength of that acid or base?

A. Yes

☒ B. No

(except universal indicator)

① Indicator to tell whether a substance is an acid/base → QUALITATIVE ANALYSIS

② Strength of acid/base → QUANTITATIVE ANALYSIS

Acidity and Alkality in Terms of pH

aye bhaiya ♡

Quantitative
Analysis



Thodi History Jaan Lo Pyaare Baccho



Sorensen, a Danish chemist, in 1909, suggested a way to express the hydrogen ions concentration of a solution in terms of pH.
pH stands for 'power of hydrogen' where 'p' represents the German word for power, potenz and H is the element symbol of hydrogen.



Introduction to pH



$H^+(aq)$ ions \rightarrow ACIDIC CHARACTER
 $OH^-(aq)$ ions \rightarrow BASIC CHARACTER

room temp.

At 25 °C, the solutions may have pH from 0 to 14 For different solutions the pH values will be:

- ① Neutral solutions: pH = 7 \rightarrow Concentration of $H^+(aq) = OH^-(aq)$ ion
- ② Acidic solutions: pH < 7 \rightarrow Concentration of $H^+(aq)$ ion $>$ $OH^-(aq)$ ion
- ③ Basic solutions: pH > 7 \rightarrow Concentration of $H^+(aq)$ ion $<$ $OH^-(aq)$ ion

Suppose, a substance has pH of 8.5. What is its nature?

① ACIDIC

✓ ② ALKALINE / BASIC

pH Scale

25°C



- If the pH value decreases than 7, the $H^+(aq)$ ions concentration increases and $OH^-(aq)$ ions concentration decreases. Hence, the acidic character increases.
- If the pH value increases than 7, the $H^+(aq)$ ions concentration decreases and $OH^-(aq)$ ions concentration increases. Hence, the basic character increases.

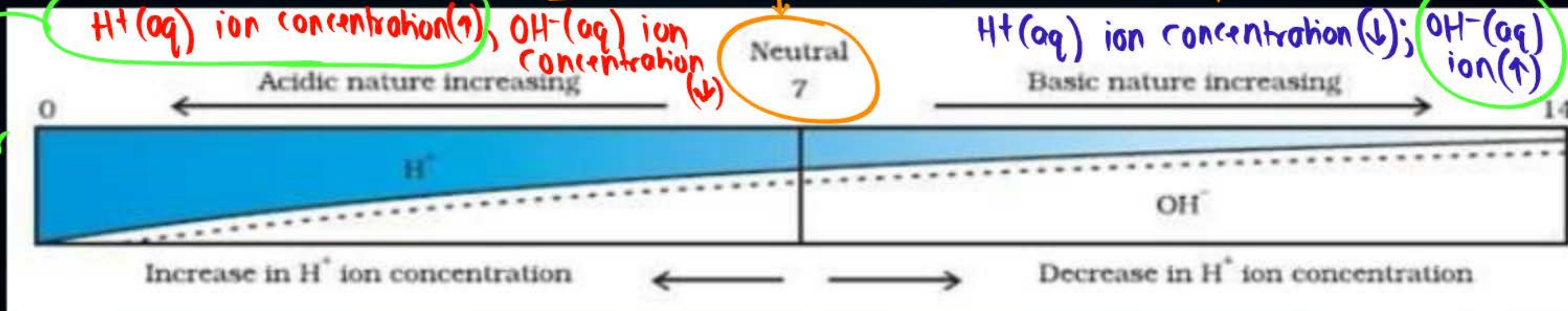
Concentration of $H^+(aq) = OH^-(aq)$ ion

$H^+(aq)$ ion concentration(↑), $OH^-(aq)$ ion concentration(↓)

$H^+(aq)$ ion concentration(↓); $OH^-(aq)$ ion(↑)

acidic character (↑)

Basic character is because of this

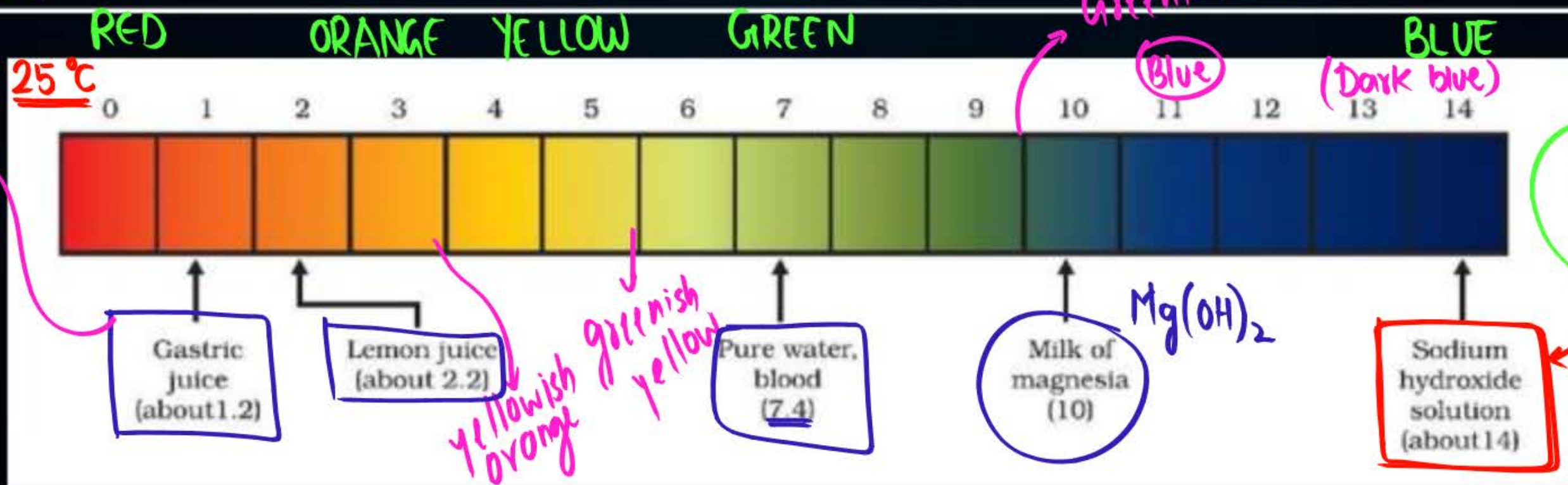




→ (Quantitative analysis)

विभिन्न of different indicators

It shows different colours at different H^+ ions concentration in the solution.



+ lipase
+ pepsin
+ mucus

Drain cleaner



pH Paper

Dip a paper
in
universal
indicator



Universal Indicator

Take out this paper
& keep it for drying } 'pH paper'



① Generally, a paper strip impregnated in the universal indicator is used for measuring the pH of the solution. This paper strip is known as **pH paper**.

② **pH meter** → digital device used to measure pH of a solution.



Colour of pH paper changes to red when dipped in a solⁿ.
Identify nature of solⁿ.

☒ A Strong acid

☐ B Weak acid

☐ C Strong base

☐ D Weak base

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Importance of pH in Everyday Life

Self Defense by Plants and Animals

(आत्मरक्षा)

NEUTRALISATION
RXN

HCOOH

Problem: When we are stung by a bee or an ant, we feel pain and irritation. This is because ant and bee-sting inject formic acid. methanoic acid

Solution: To nullify its effect and to provide relief, a solution of mild base like baking soda should be applied. or basic calamine soltn (soltn of ZnCO_3)

FUN FACT



Self Defense by Plants and Animals



Neutralisation Rxⁿ

methanoic acid

Problem: Leaves of nettle plants have stinging hair that injects formic acid when touched accidentally.

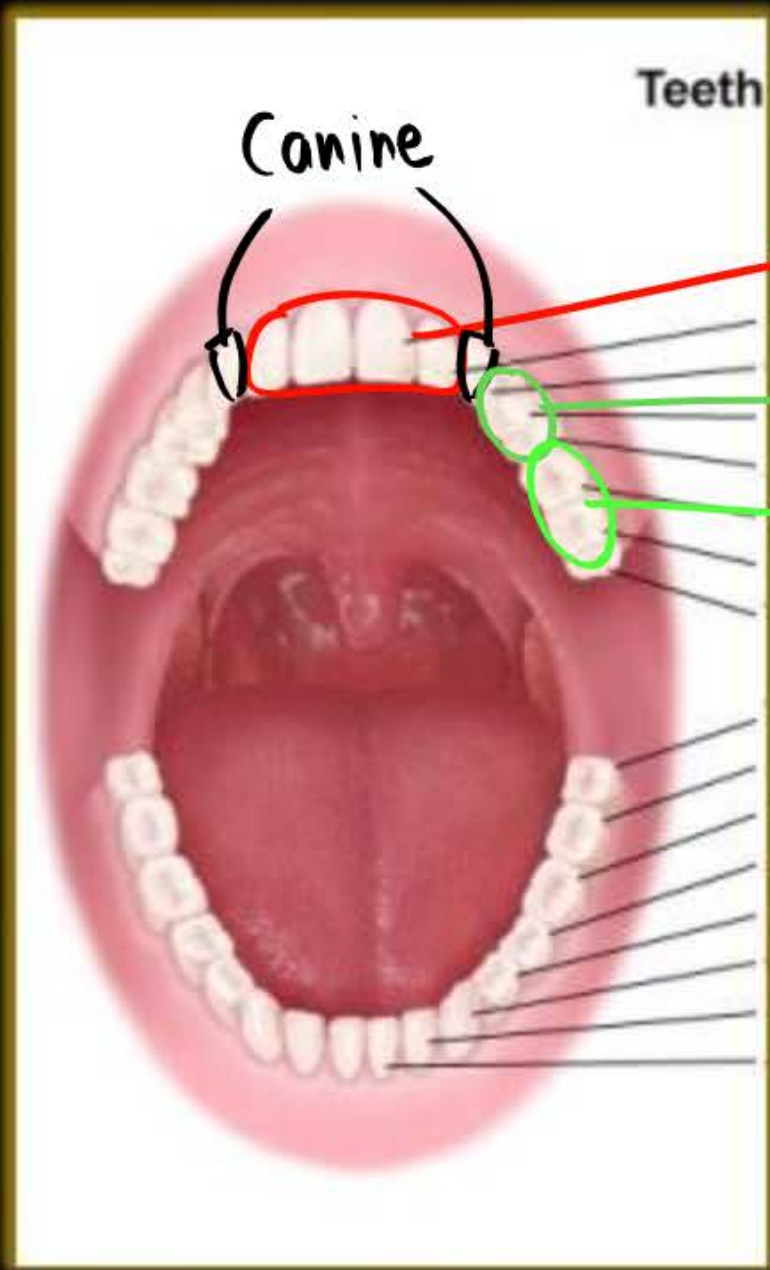
Solution: A traditional remedy is rubbing the area with the leaf of the (dock plant) that grows in the vicinity of the nettle plant.



DOCK PLANT

(Basic in nature)

Details About Teeth

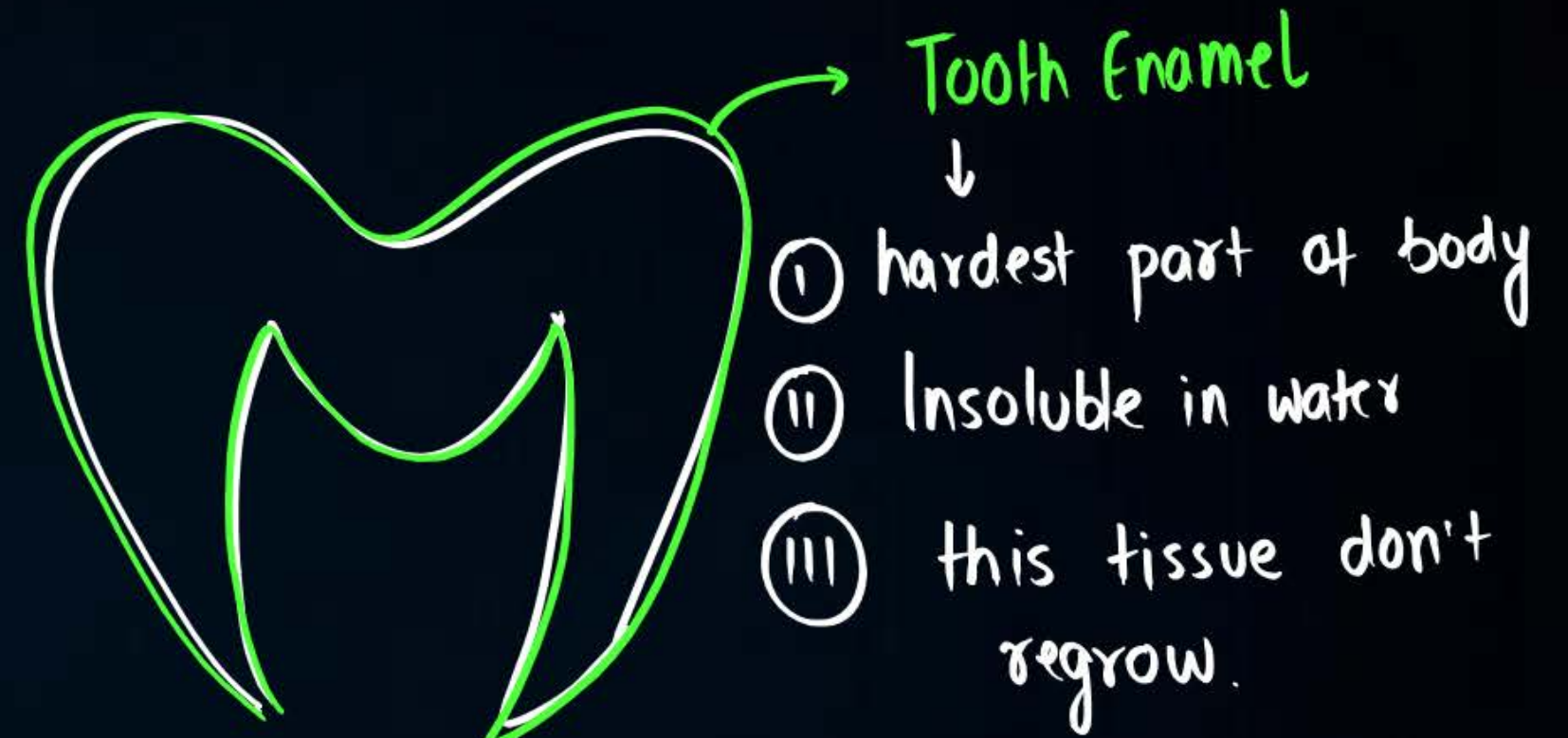


Canine

INCISOR

Premolar

Molar

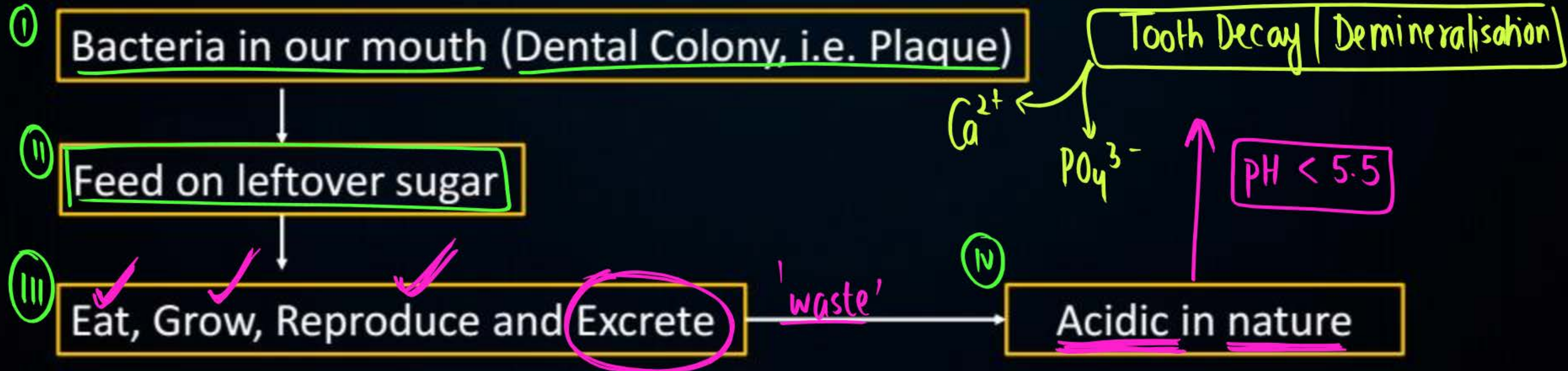


Tooth Decay

'Demineralisation'



Problem: Our tooth enamel is made of calcium hydroxyapatite (a crystalline form of calcium phosphate), $\text{Ca}_3(\text{PO}_4)_2$, which is the hardest substance in the human body. It is insoluble in water but it gets corroded when the pH of the mouth falls below 5.5, i.e. moderately acidic. *degradation*





Baccha Logg Be Like



chi (pronounced
as kai)

X (mole fraction)





Tooth Decay



Plants and Animals

② **Solution:** The best way to prevent tooth decay is to clean the teeth with a basic substance like toothpaste that neutralises the effect of acid produced in the mouth.

① Natural mechanism
to prevent tooth decay/
demineralisation

Saliva \Rightarrow Slightly alkaline \downarrow
neutralises acid
in mouth

Sugarless
chewing
gum

more you chew more
saliva will be released



Human Digestive System

Gastric Juice \rightarrow conc. HCl + pepsin + mucus etc.



③ Caffeinated drinks \rightarrow Tea, Coffee

Problem: Due to ① overeating or ② eating too much spicy food, the stomach produces more amount of hydrochloric acid than required. This results in the pain and irritation in the lower chest area. This condition is called acidity. / acid reflux. \rightarrow starts to travel upwards in oesophagus.

Solution: It can be cured by taking antacids like Milk of Magnesia, ① Mg(OH)_2 , ② COLD MILK, which neutralises the excess acid.



\downarrow
'mild alkali'



pH of Soil



Every crop grows better in a particular pH range. of soil.

Example: Rice – Slightly acidic, Sugarcane – Neutral and Citrus fruits –
Alkaline soil

↓
'orange & lemon'

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Let's Practice



PW Ka **ChemStar!**

Q.

Question



Which among the following is the normal pH range for the human body to work?

A 5.5-7.0

B 6.8-7.2

C 7.35-7.45

D 8.2-10.2

more acidic → ACIDOSIS

-ve alkaline → ALKALOSIS

Concept Polish (गृहकार्य)





Give a Thought



A farmer wants to grow sugarcane on his field and has treated the soil of his fields with quicklime, slaked lime or chalk. Under what conditions of the soil he has done it?

- A. ~~Alkaline~~ Acidic
- B. Basic

Question



Search and answer. (Not from exam point-of-view)

(a) Can an antacid contains an acid?

Hint: Search the components present in effervescent antacids.

(b) Is it good to treat a wasp sting with a basic substance?

Insaniyat Ka Gyaan

*Insaniyat Ka Gyaan
Jo Banae Behtar Insan*

चमत्कार भी उनके साथ होते हैं जो
अपनी मेहनत और चमत्कार दोनों
पर विश्वास करते हैं।



SUNIL BHAIYA

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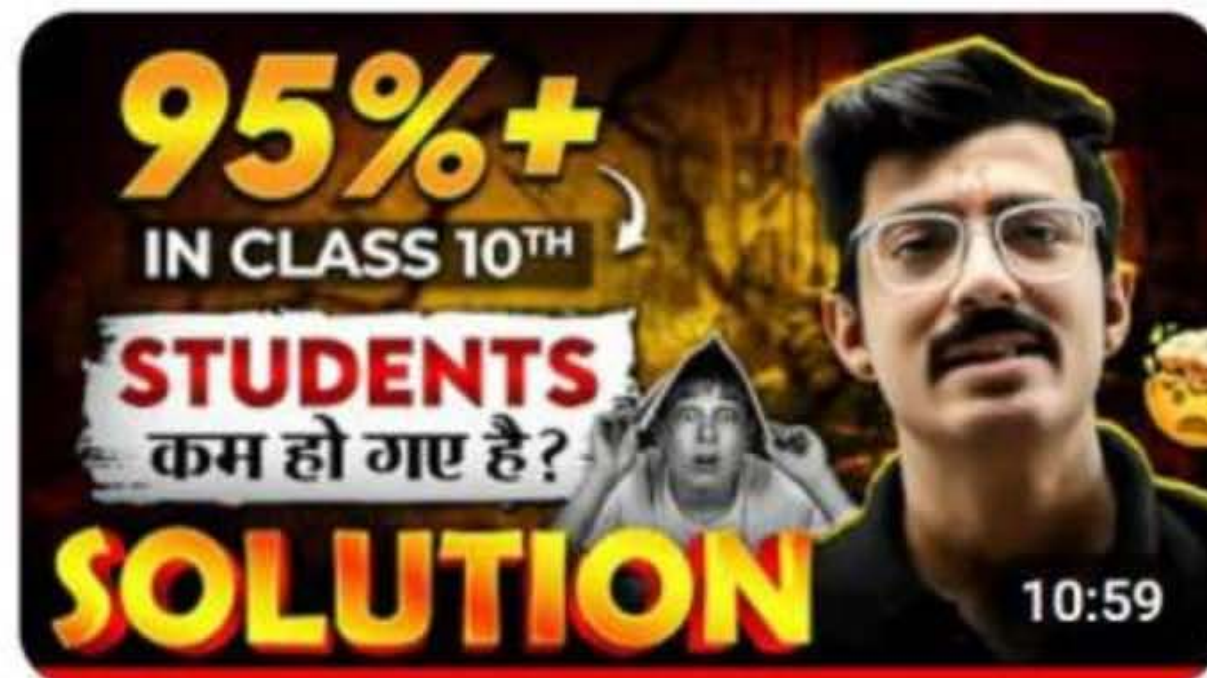
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SUNIL BHAIYA IS ALWAYS THERE FOR YOU.

#sbsathhai (✓)

#pwsathhai (✓)



**THANK
YOU**

