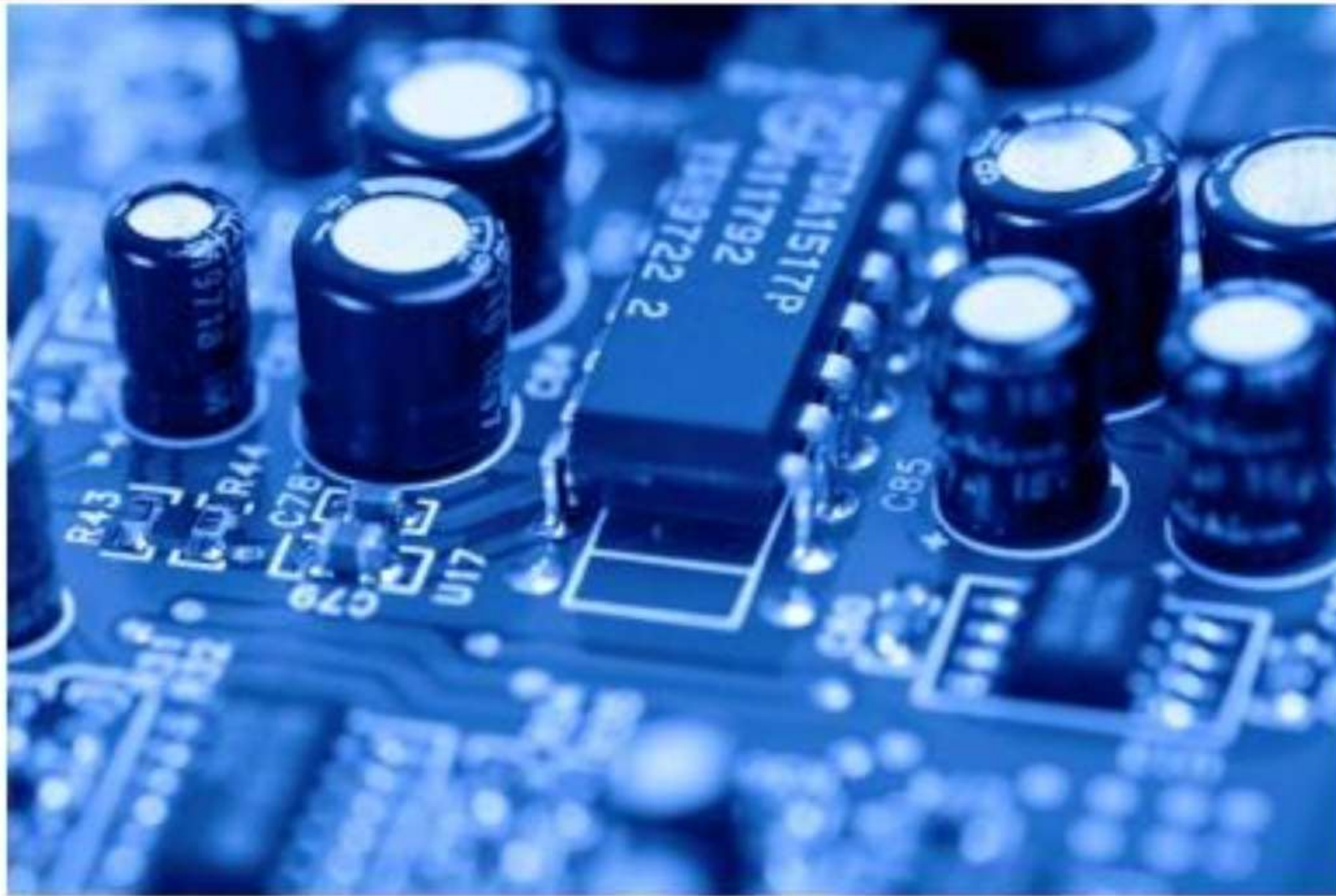




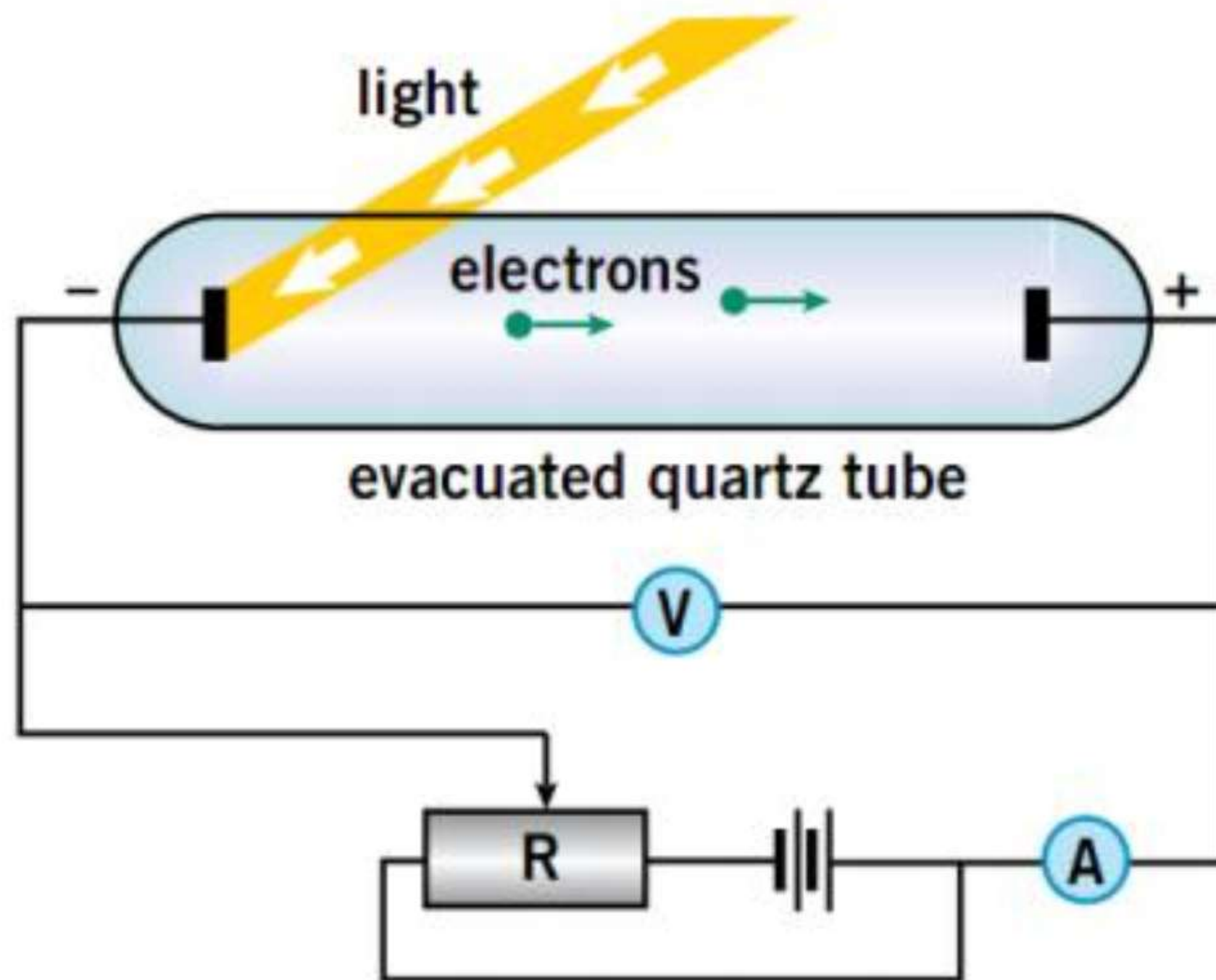
# इलेक्ट्रॉनिक्स (Electronics)



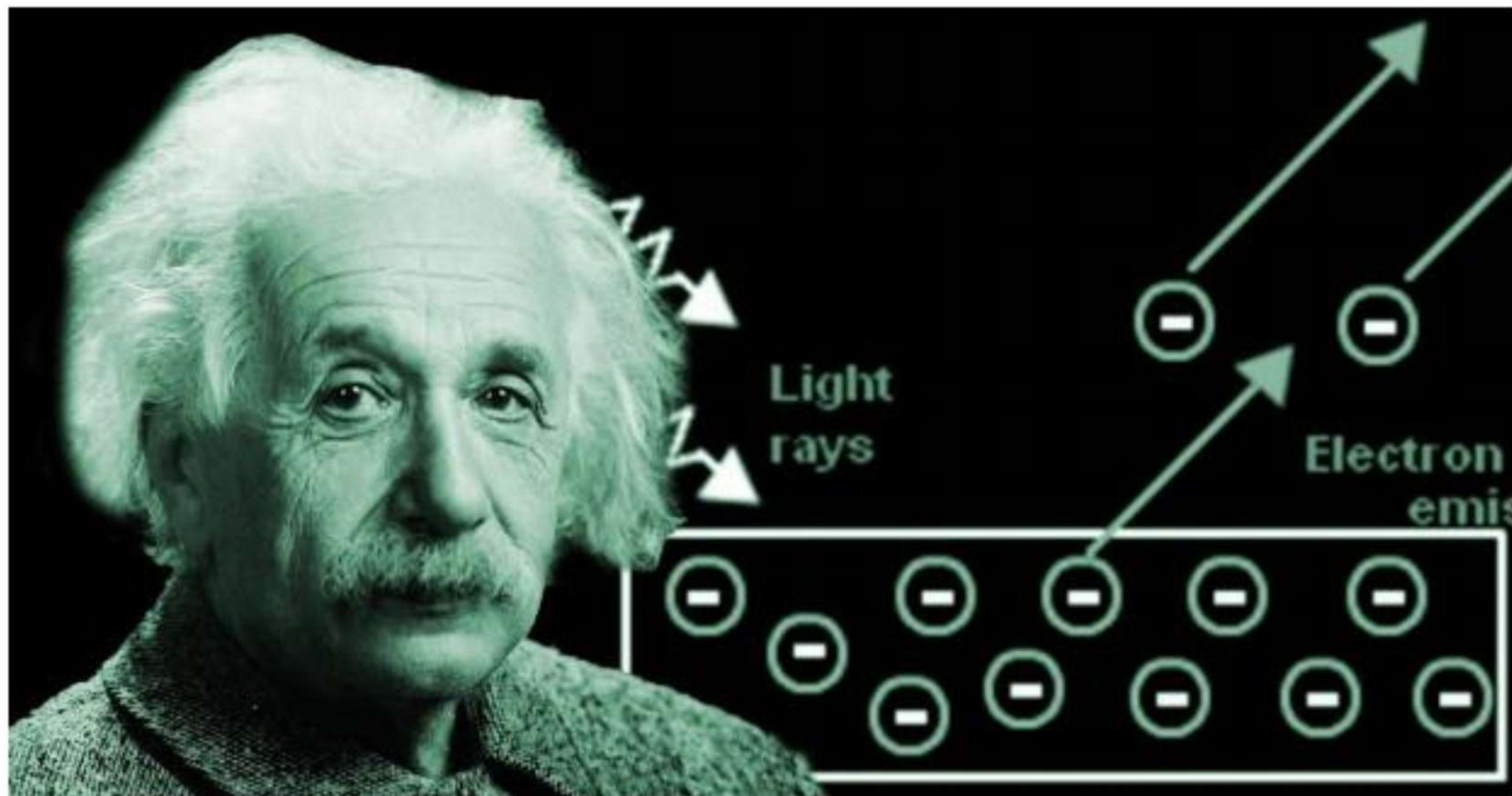
**@Sumit Shukla (Faculty of Science and Technology)**

## General Introduction And Question Trend

# Photoelectric Effect









## Application of Photoelectric Effect



# Fluorescence (प्रतिदीप्ति)





## Phosphorescence (स्फुरदीप्त )





## जैव रासायनिक प्रकाश (Bioluminescence)



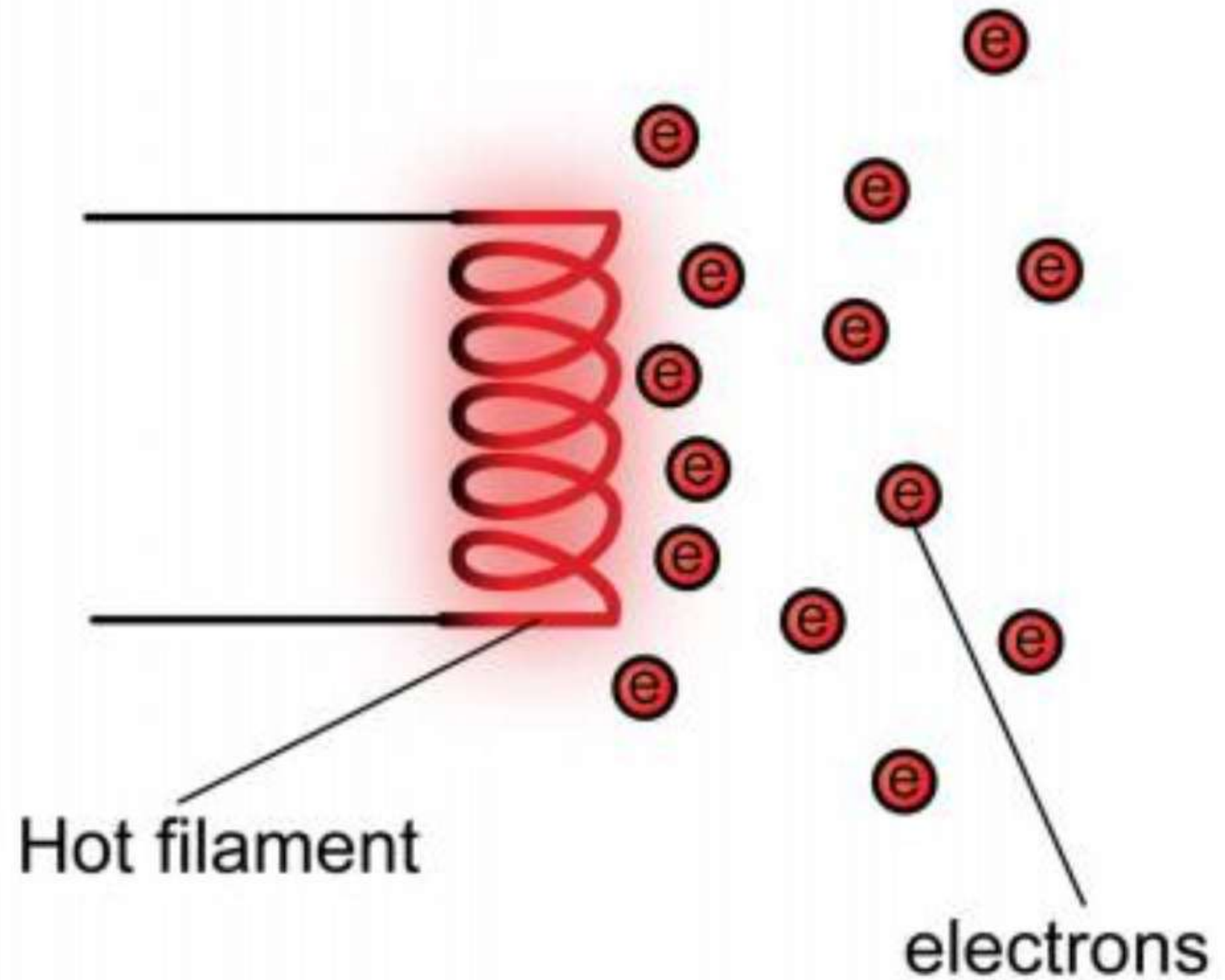
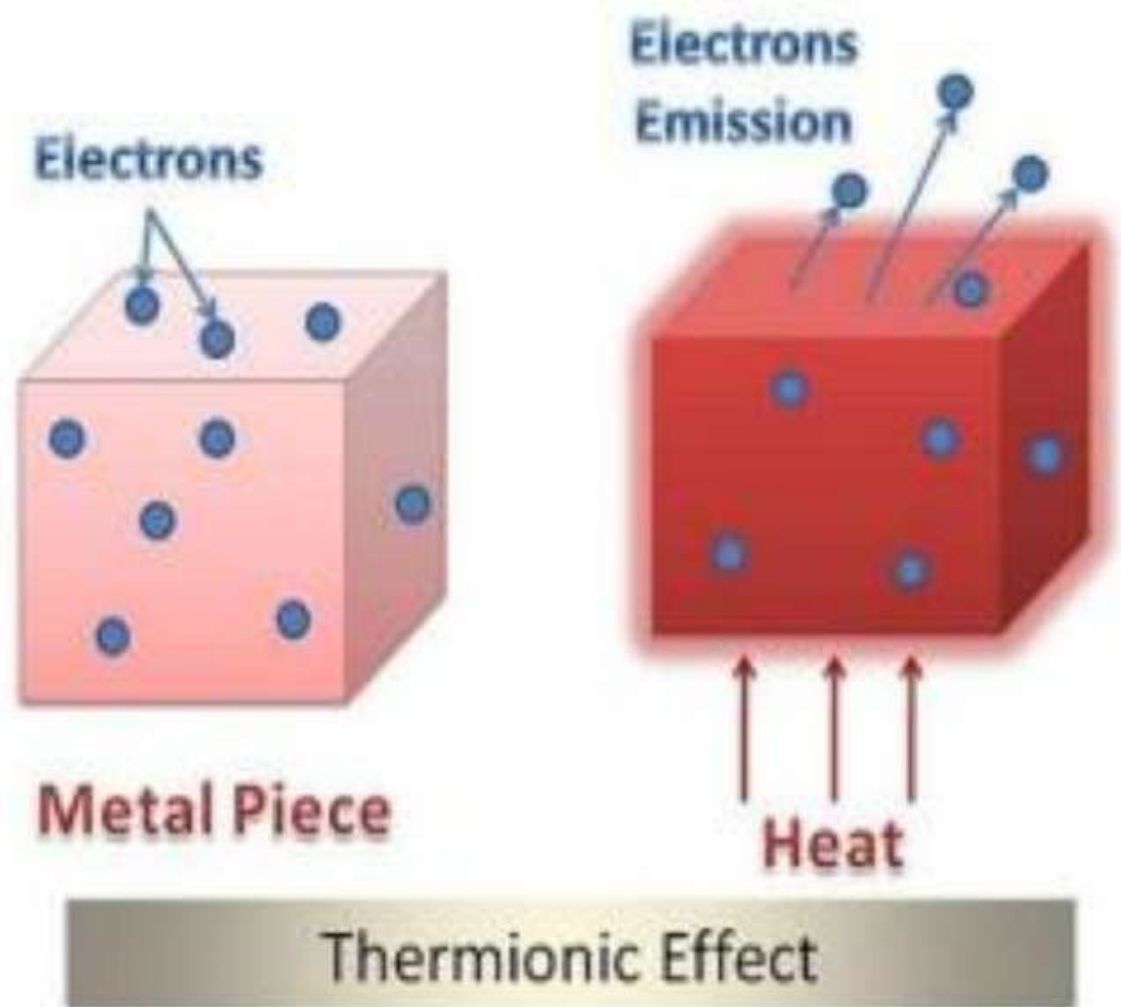
## प्रमुख प्राकृतिक प्रकाश

### EXAMPLES OF NATURAL LIGHT SOURCES

- Fire
- Sun
- Bio-luminescent
- Lightning
- Stars



# ऊष्मा आयनिक उत्सर्जन (Thermal ionic emission)





# डायोड (Diode)

Gunn Diode



LED



PIN Diode



Step Recovery Diode



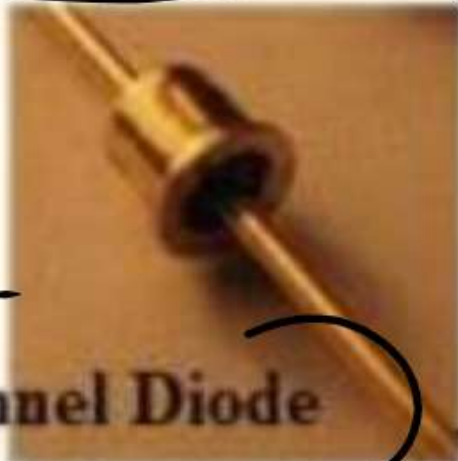
Laser Diode



Photo Diode



Tunnel Diode



Varactor Diode



Schottky Diode



Zener Diode



डायोड

→ जॉन एम्ब्रोस फ्लेमिंग ( डायोड के बारे ) ✓

→ एक कैथोड | एक एनोड

→ function → AC धारा → DC धारा में convert

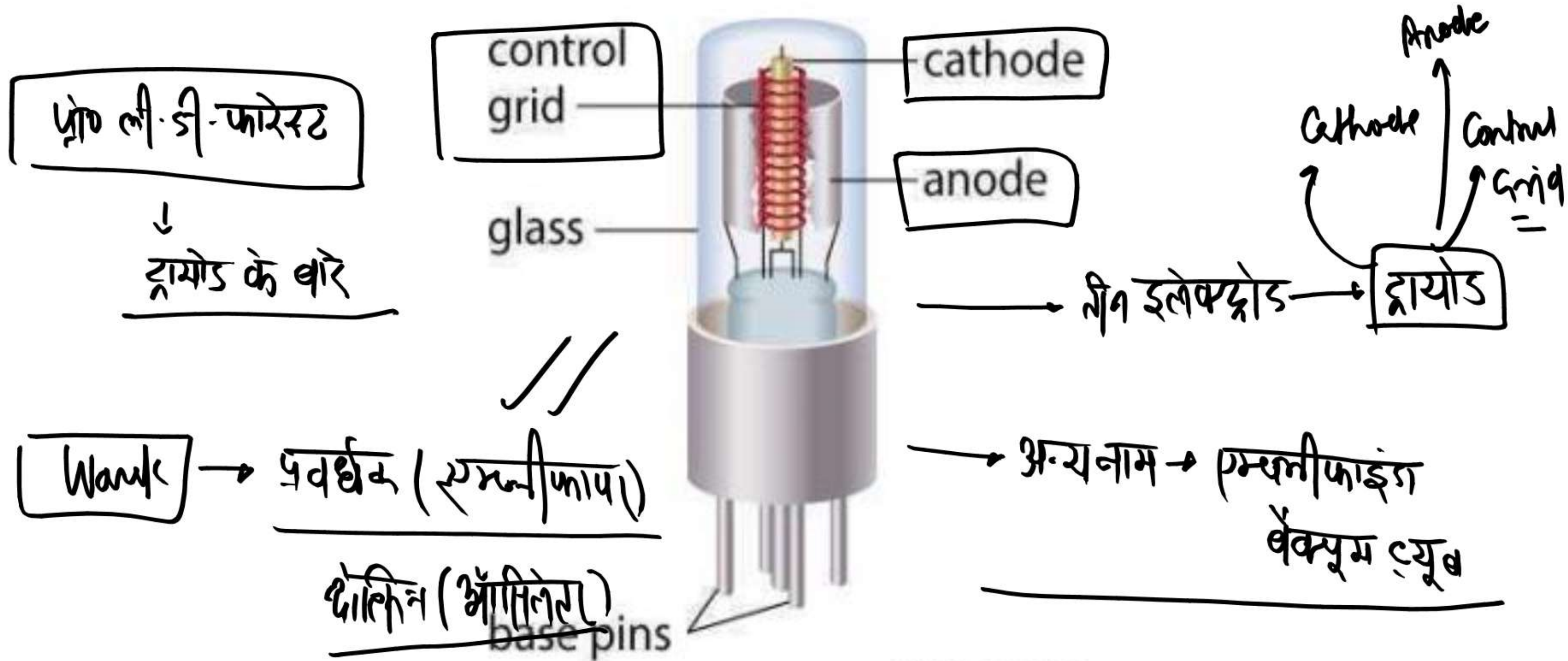
मोकाइल फोन चार्जर | सामान्य  
चार्जर

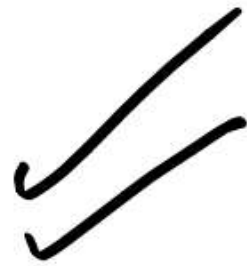
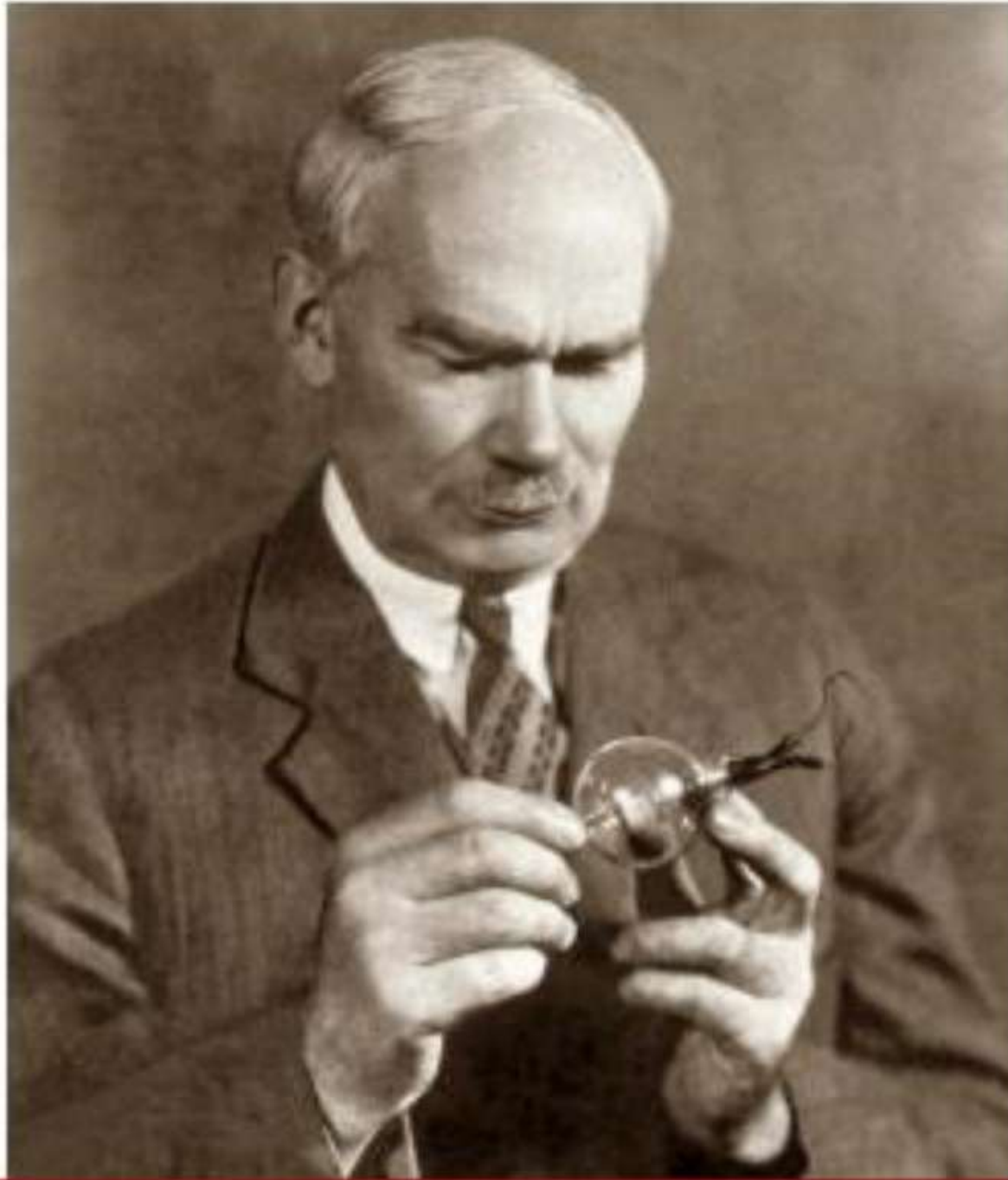


**John Ambrose Fleming (UK)**



# ट्रायोड (triode)





**Lee de forest (USA)**

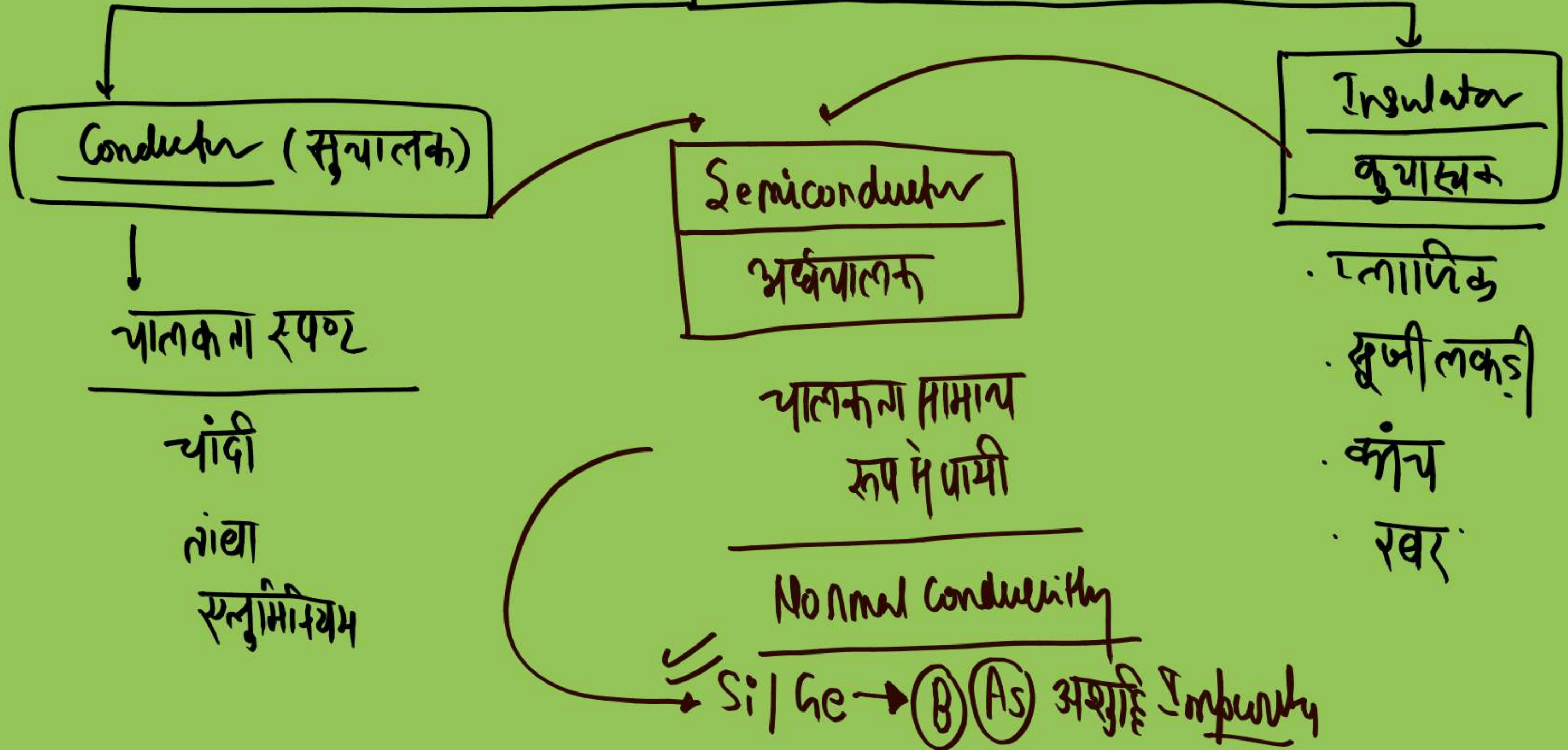


# Semiconductor (अर्धचालक)





# पदार्थ



# Type of semiconductor

✓ **n - type semiconductor**

✓ **p- type semiconductor**



n-type

n-type of Semiconductor

સિલિકૉન / ગર્મેનિયમ

આર્જેનિક / થોરૉન  
આદિ

ચાલકતા

ઇલેક્ટ્રિસિટી

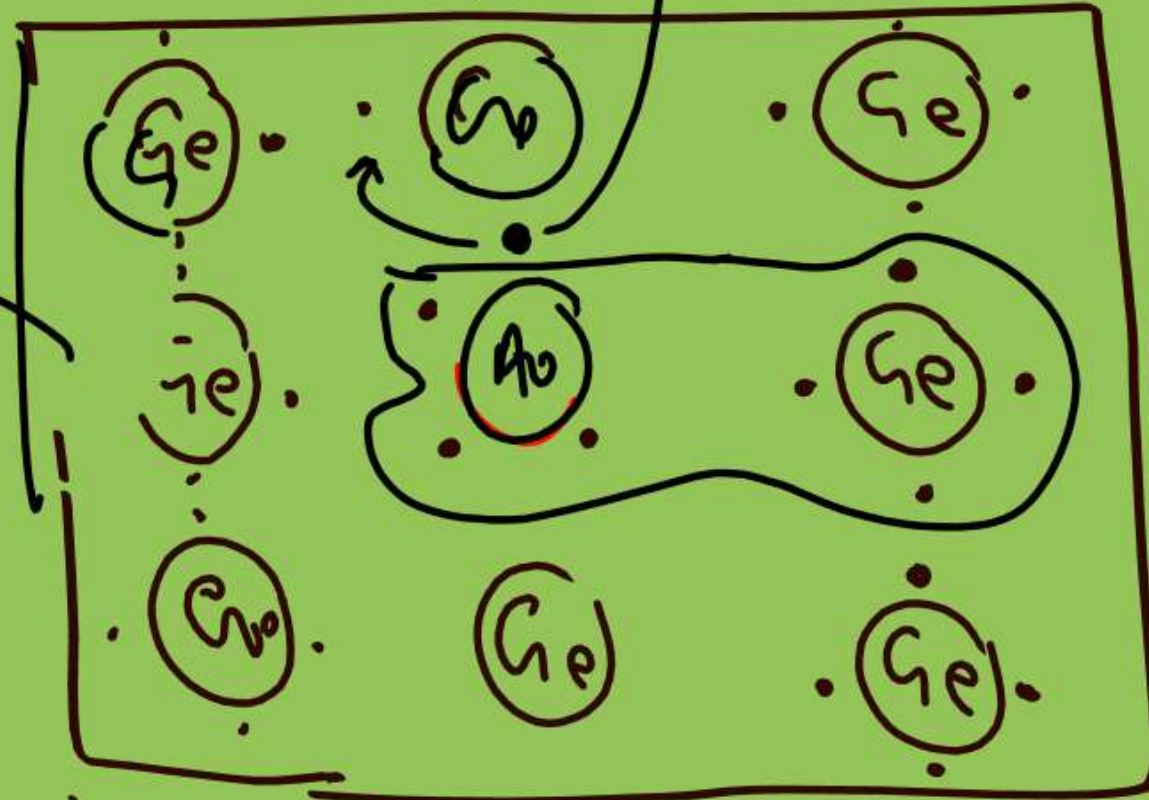
Negative

Free  
Electron

Movement

ગતિ

Free Electron



ગર્મેનિયમ (Ge)

અણુક ગિપમ

Ge → Outer most  
Electron  
4

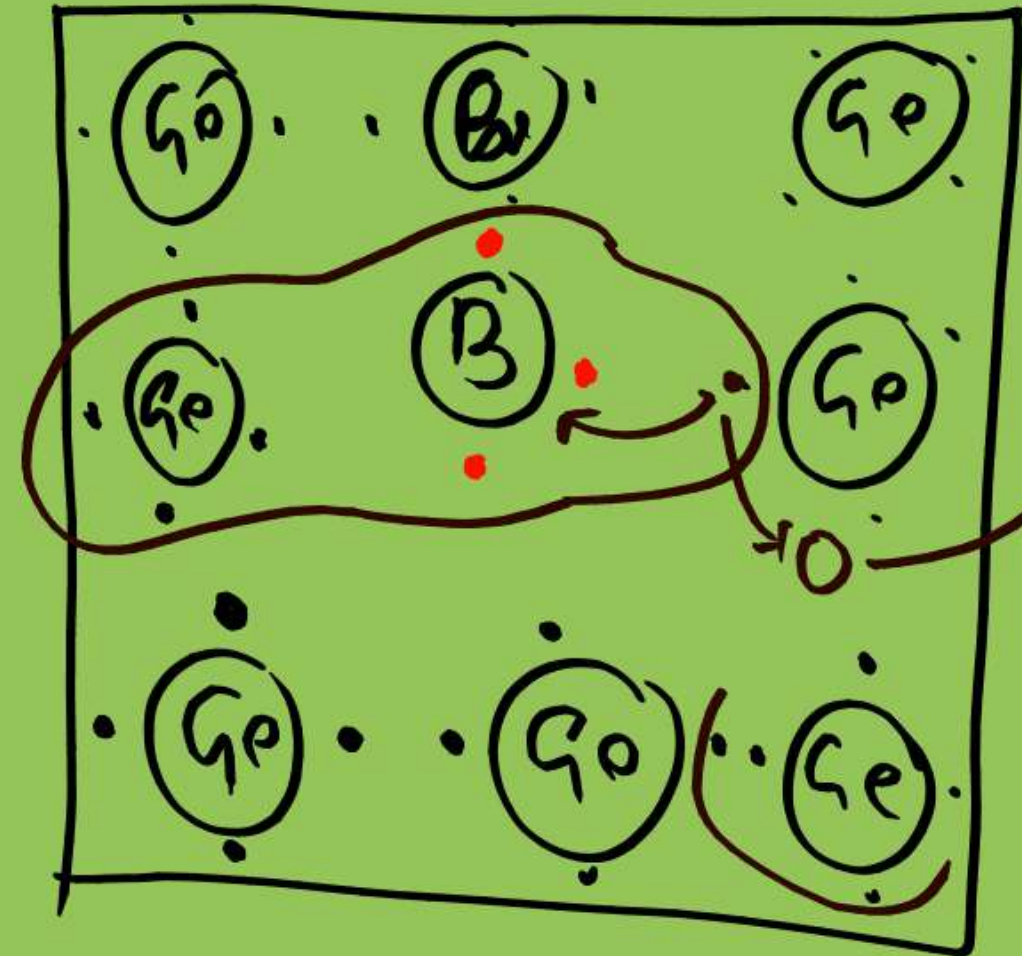
As → Outer Most El  
(5)



P-type-Semicon

होल / कोर ( + )

Electron



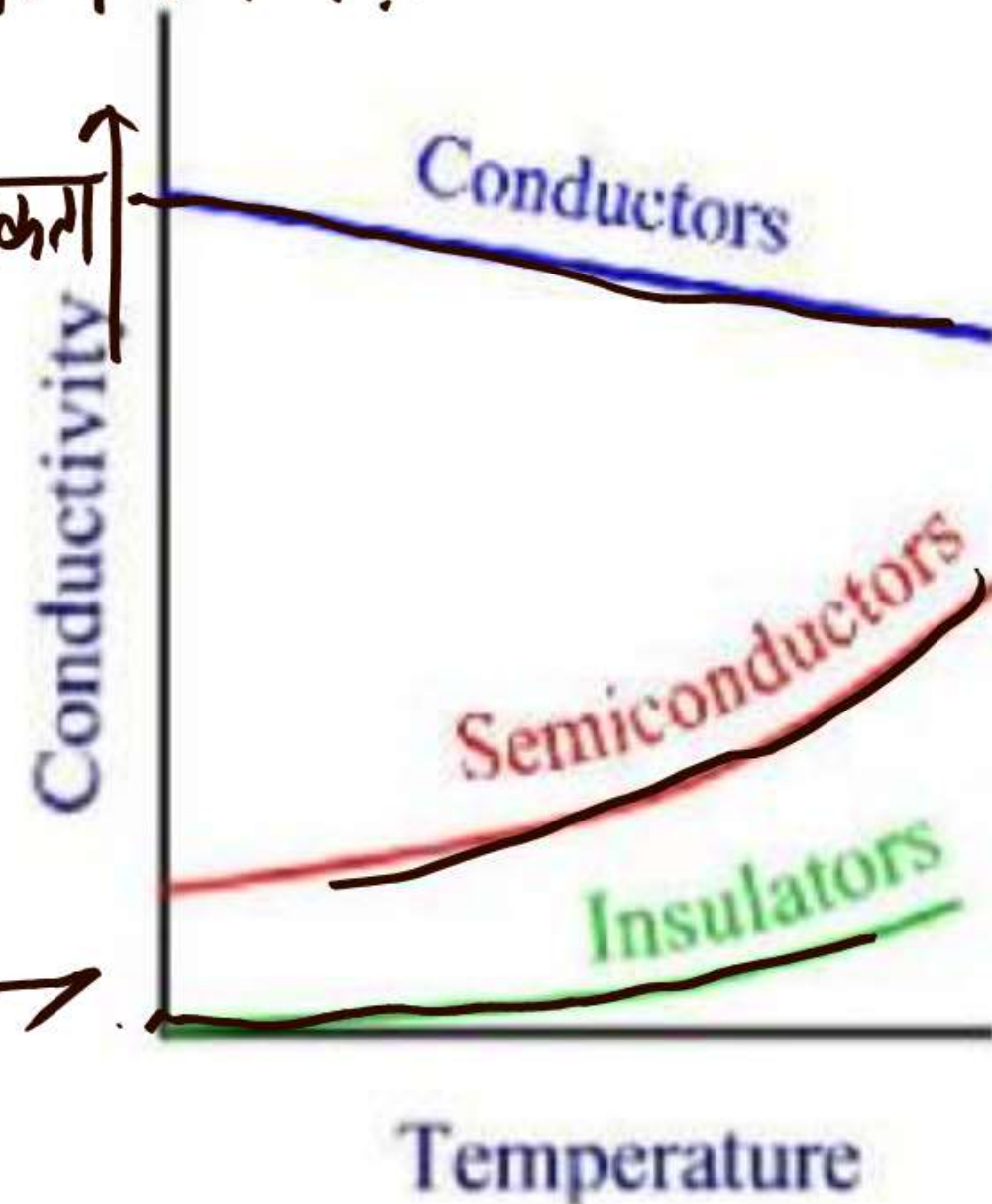
## Effect of temperature on semiconductor

Note: अर्धचालक का तापमान बढ़ाने पर चालकता बढ़ती है।

अर्धचालक (T) ↑ चालकता ↑

Note: चालक तार का तापमान अधिक

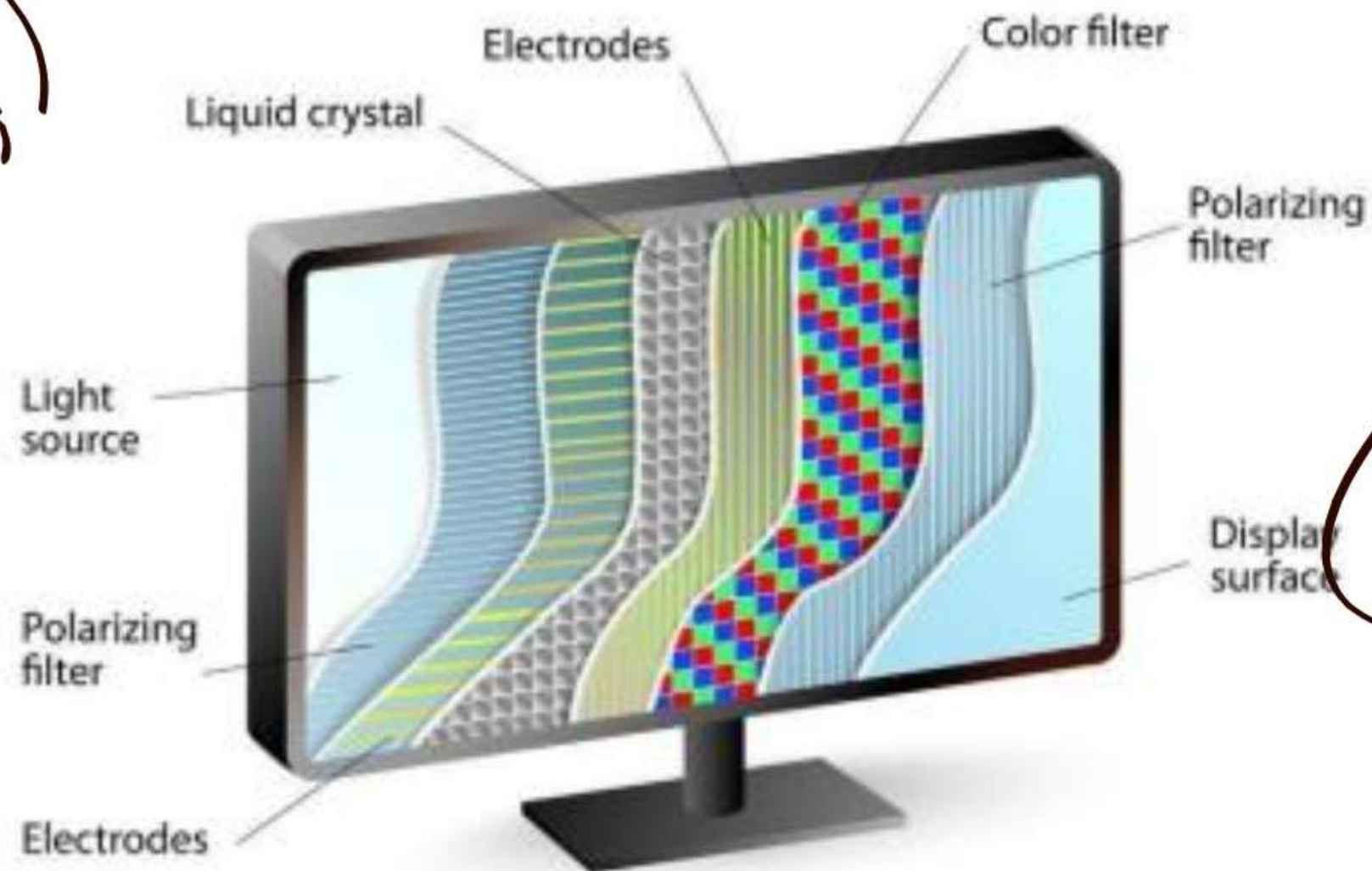
चालकता ↓





# Liquid crystal display ( LCD)

## LIQUID CRYSTAL DISPLAY



→ TV  
→ कैलाकुलेटर डिप्ले  
→ थ्री का डिप्ले

Organic solid

Liquid crystal

गैस व द्रव के  
बीच की अवस्था

LCD

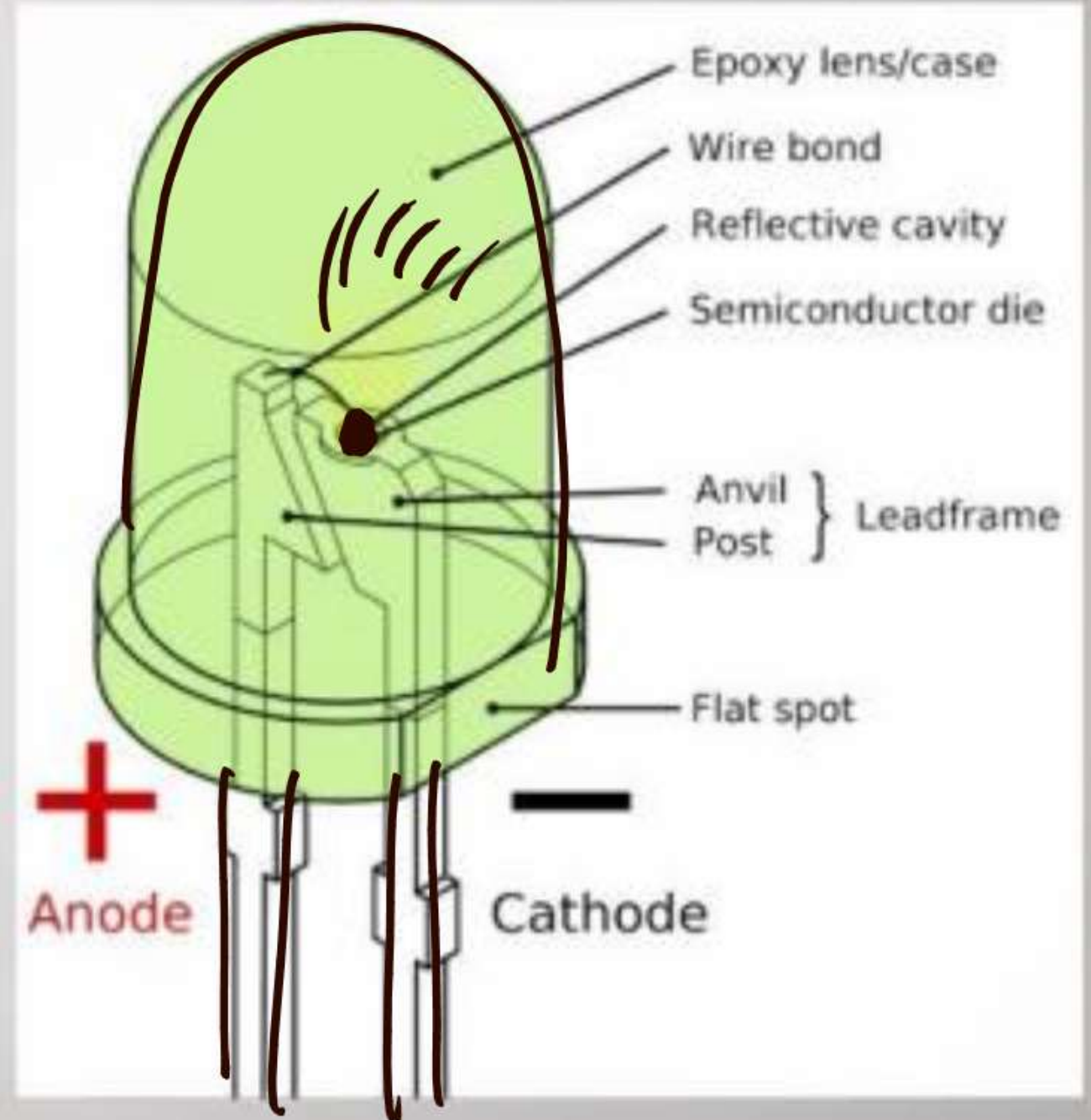


# Light emitting diode (LED)

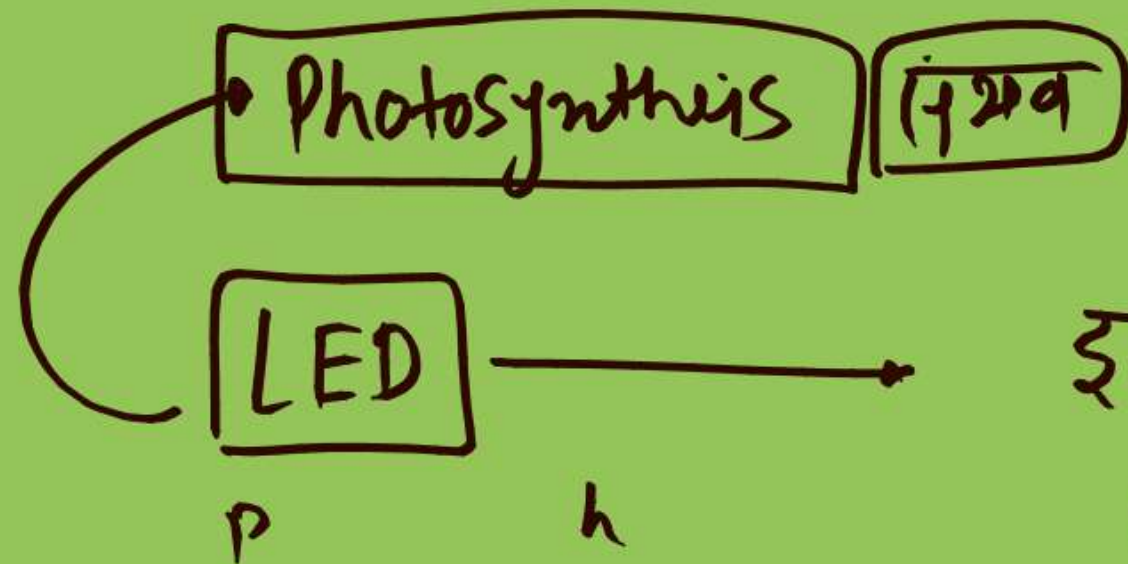
LED आधारित युक्तियाँ  
कई LED का जलवायु  
रूप होती हैं

LED बल्ब  
LED डिप्ले  
LED रोड

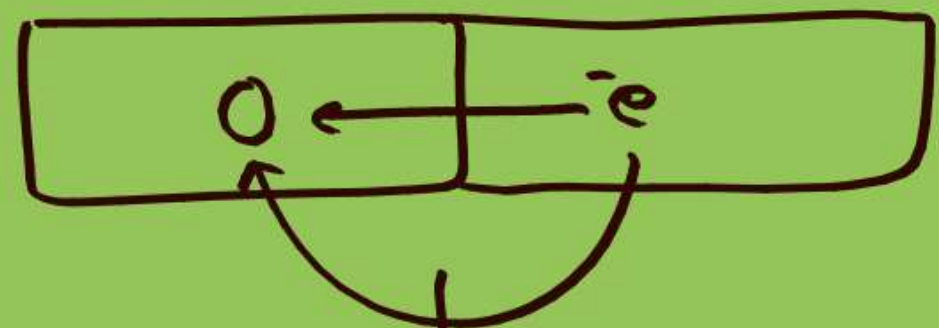
100+ LED





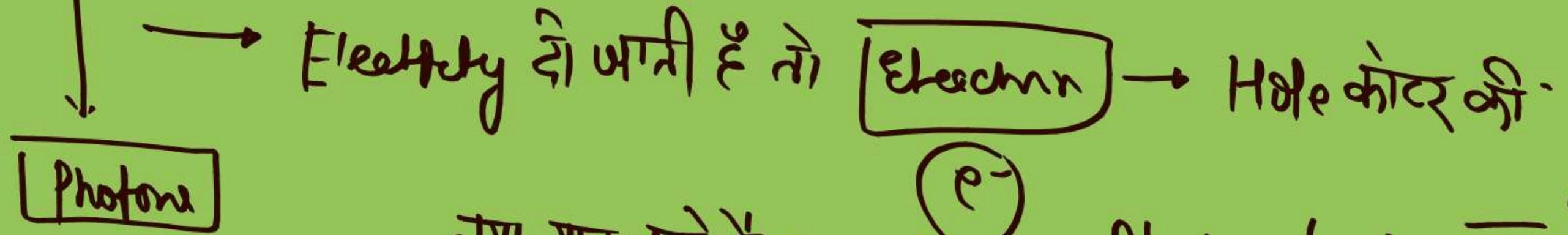


इलेक्ट्रो ल्यूमिनेंट युक्ति है, जो अर्धचालक प्रकाश स्रोत होता है =



P-n Junction diode.

का उपयोग किया जाता है ✓



Electricity दी जाती है तो

लगा यात्रा करते हैं तथा



Photon (hv) उत्पन्न  
प्रकाश



પ્રકાશીક શુભ્રતીયાં

↓  
LED

↓  
વિલ્લુલુ હાનિલાદક  
નહી

સ્વાસ્થ્ય / પર્યાવરણ  
✓ ✓



પ્રાથમીક રંગ

લાલ  
હરો  
નીલા

Red LED  
Green LED  
Blue LED

અવિલ્લુલુ  
વલુત પલ્લો

2014

Nobel

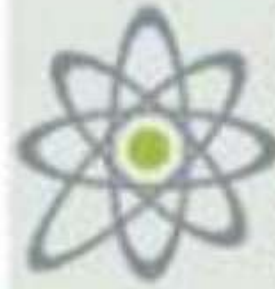
Result

White LED

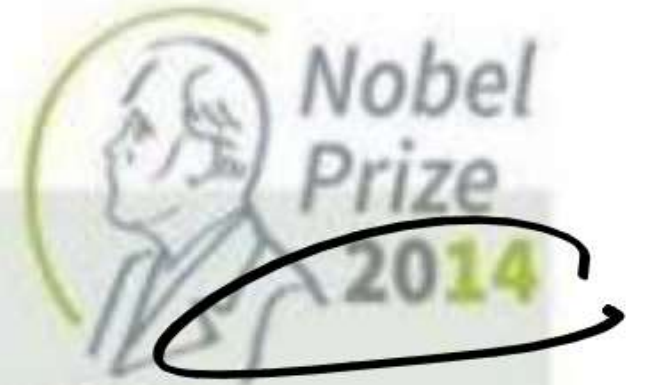
ગુજા યોગા

વલ્લુ

# The blue light-emitting diode



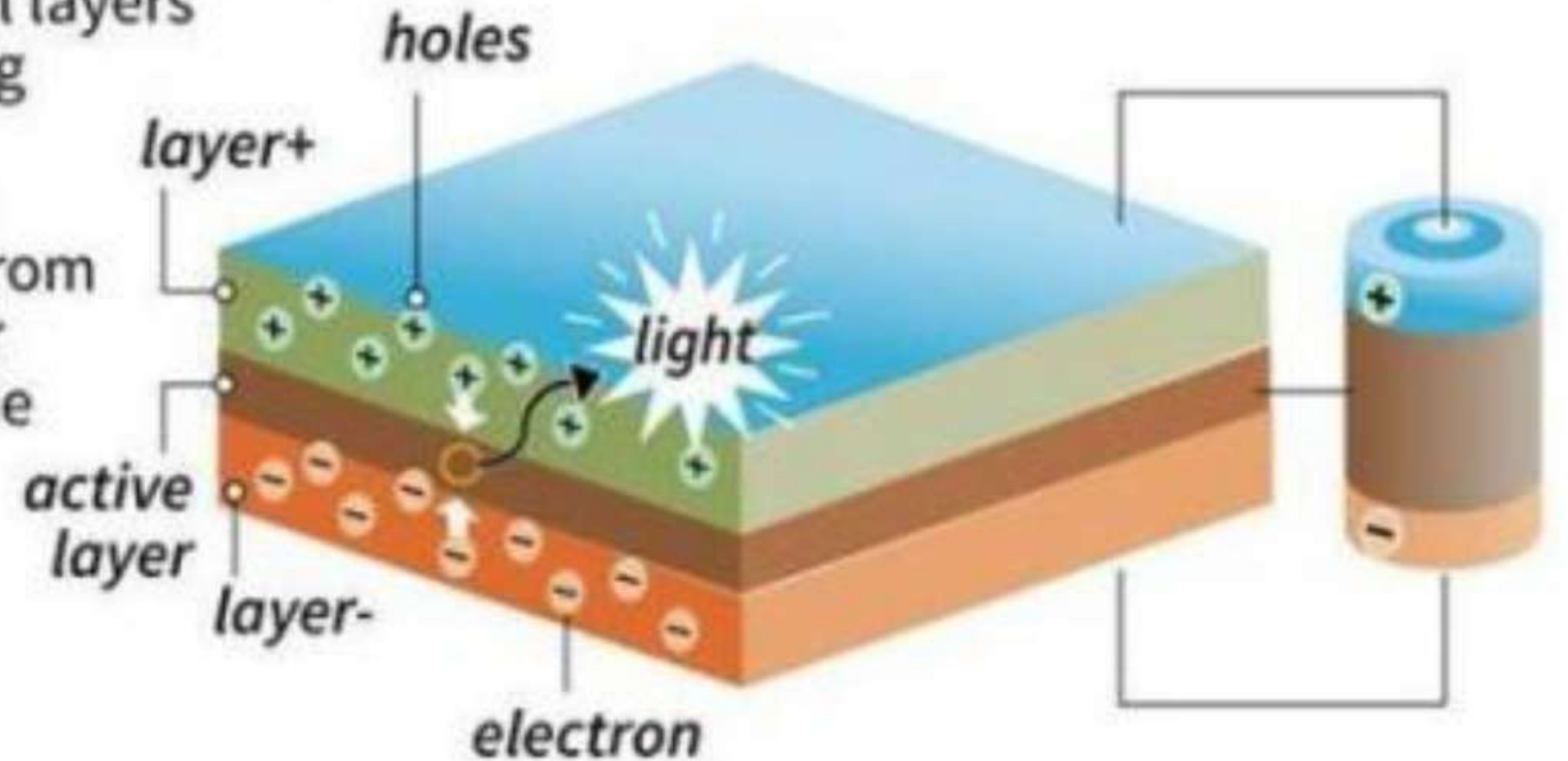
Work by **Isamu Akasaki**, **Hiroshi Amano** and **Shuji Nakamura** led to a low-energy source of light for illuminating homes and computers, as well as a weapon against global warming



## A light-emitting diode (LED)

consists of several layers of semiconducting materials.

Electrical voltage drives electrons from the negative layer and holes from the positive layer to the active layer, where they recombine to emit light





# Laser



हटा २π लाइन

VIBGYOR

**LASER**

Red Laser

कमजोर

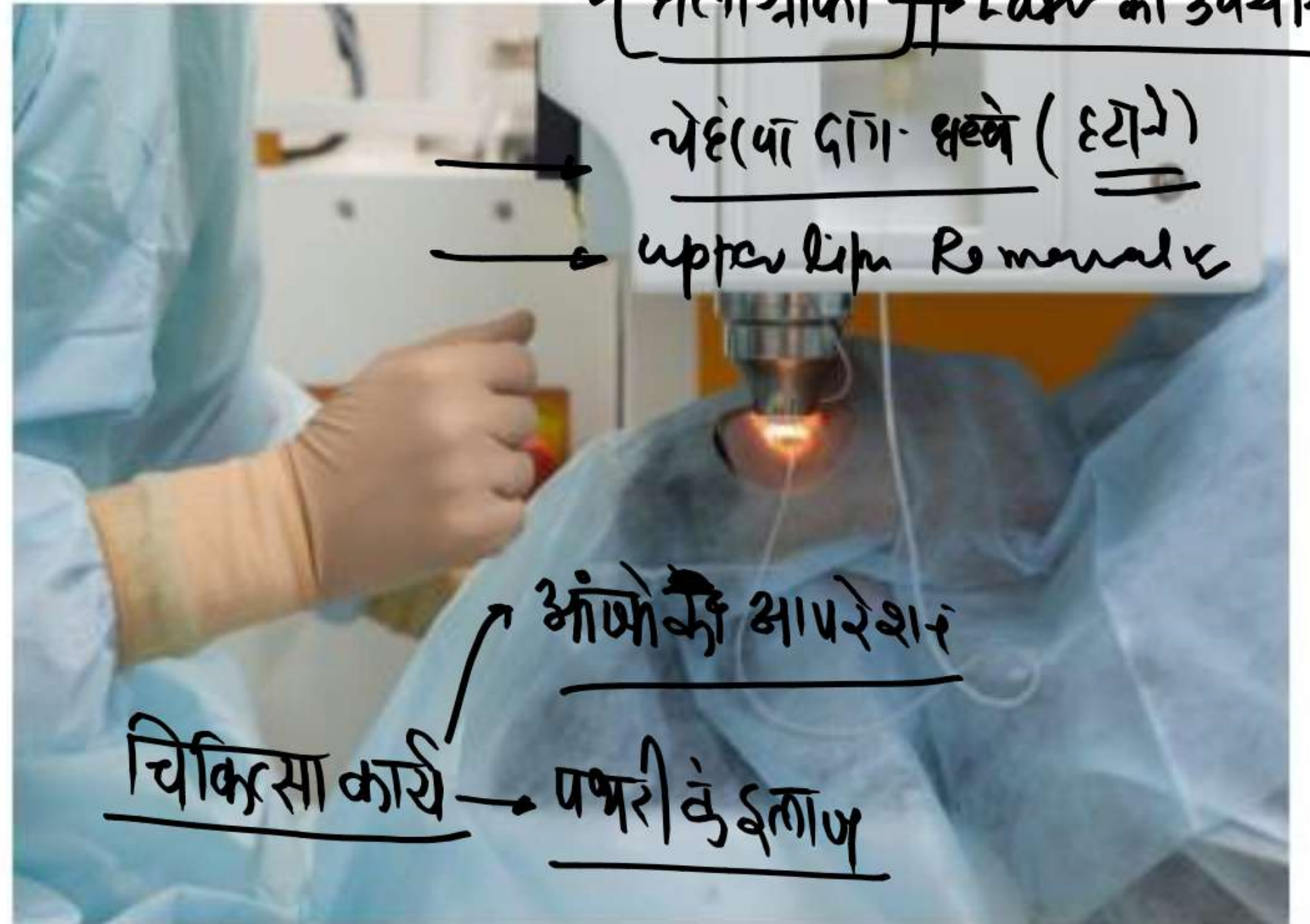
**Light Amplification by Stimulated  
Emission of Radiation**



© 2000 Stewart and Ryan Pearson



# लेजर तकनीक का अनुप्रयोग

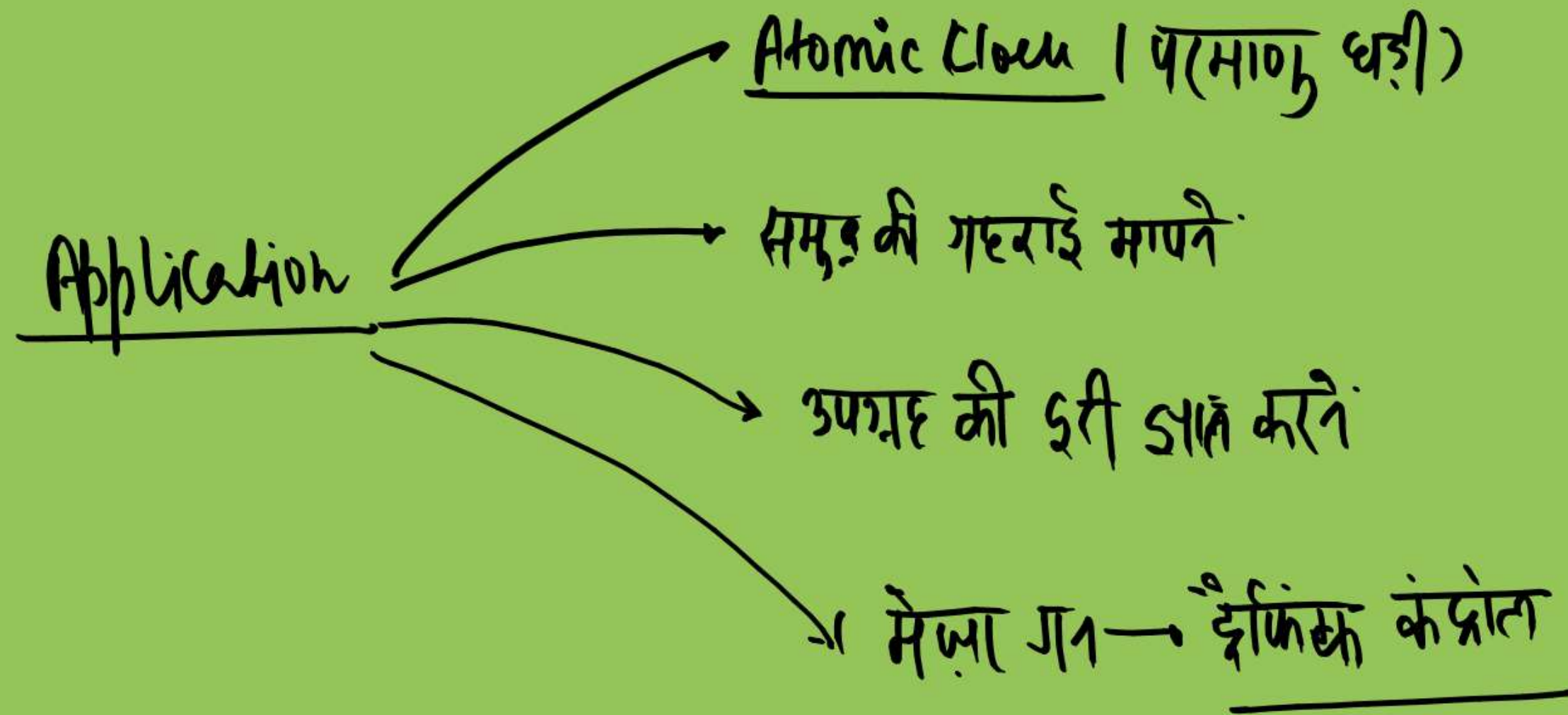




मेसर

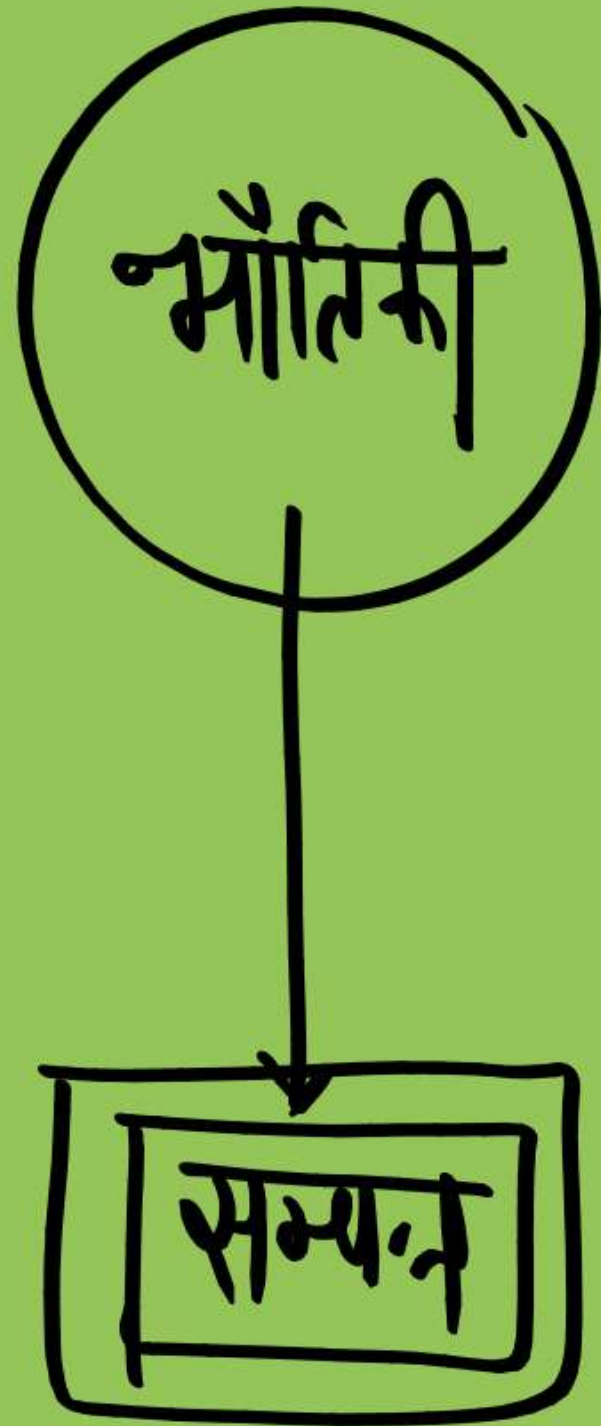
## Microwave amplification by the stimulation emission of radiation



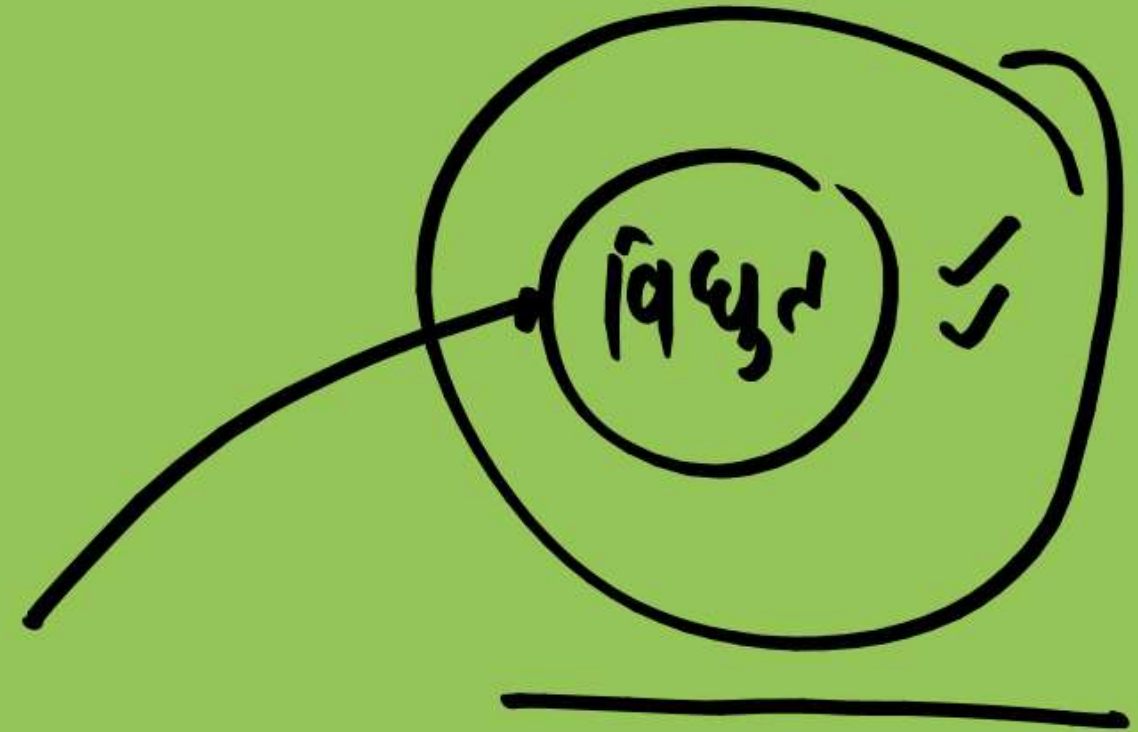


Note मैपिंग, अधिक क्षमतावान, हुल्ला → (त्येपु)





प्रकाश  
रंग  
ध्वनि। तरंग  
ऊष्मा



थॉमिनी

परमाणु भौतिकी

चुम्बकत्व

पदार्थ की अवस्था

रूपेकक्रम

दोम / दक / गेम,

