



# **SNS COLLEGE OF TECHNOLOGY**

Vazhiampalayam, Coimbatore-35

**(An Autonomous institution)**

Accredited by **NBA-AICTE** and Re-Accredited by **NAAC-UGC** with **A+ Grade**

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## **DEPARTMENT OF CHEMISTRY**

**COURSE NAME : 23CHT101- ENVIRONMENTAL SCIENCE AND  
SUSTAINABILITY**

**I YEAR / I SEMESTER**

**UNIT : 4. ENERGY RESOURCES**

**TOPIC : 2. SOLAR ENERGY**



# BRAINSTORMING WITH RECAP





# INTRO



- Energy obtained directly from the sun is called solar energy.
- This energy is obtained in the form of heat and light.
- Several techniques are available for collecting, converting and using solar energy.







# SOLAR CELL

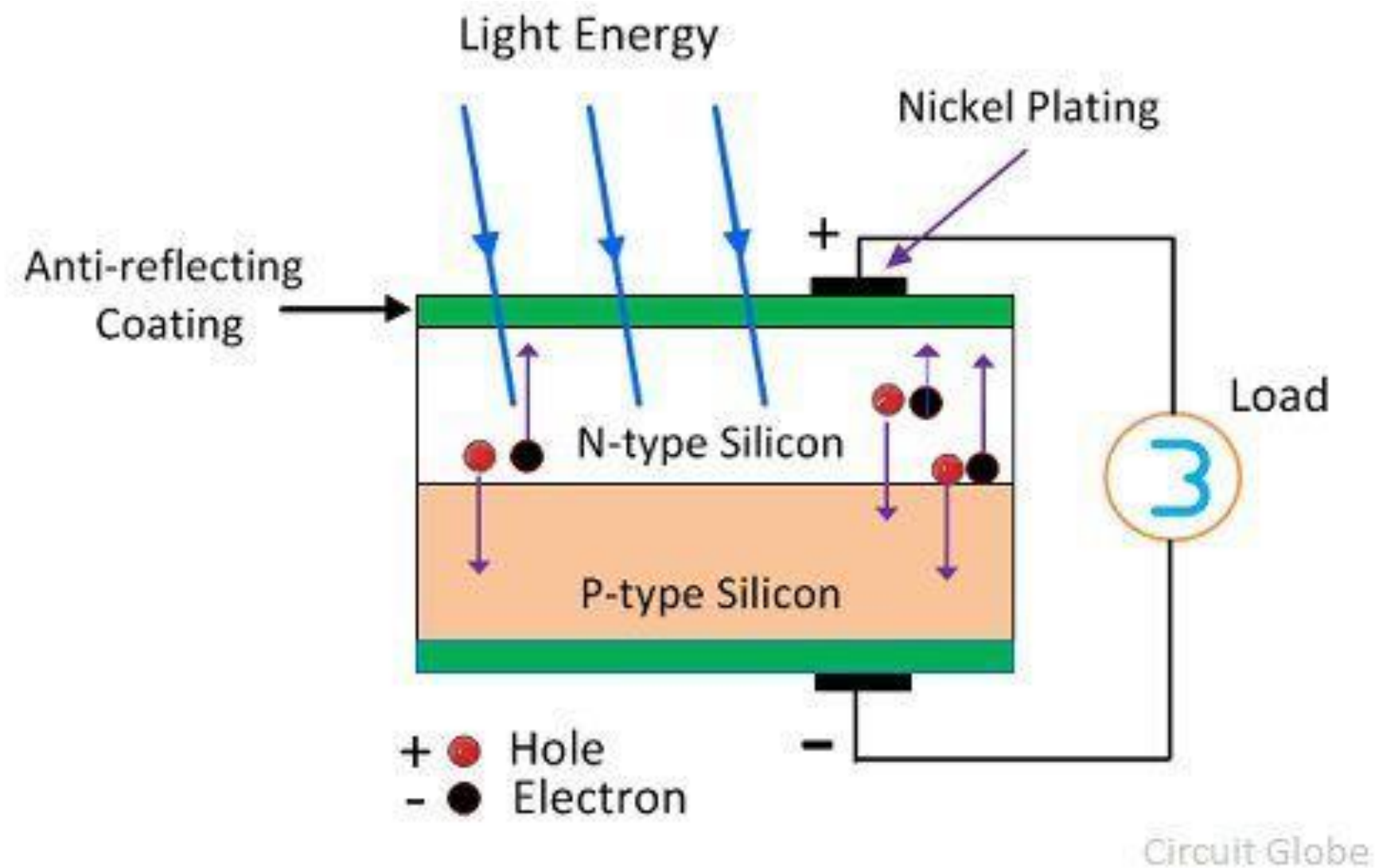


- **Solar cells or Photovoltaic cells:**
- It converts solar energy (energy from sun) directly into electrical energy.
- Solar cells consists of a p-type semiconductor (such as Si doped with B) and n-type semiconductor (such as Si doped with P).
- They are in close contact with each other. When the solar rays fall on the top layer of p-type semiconductor the electrons from the valences band get promoted to the conduction band and cross the p-n junction into n-type semiconductor.
- There by potential difference between two layers is created which causes flow of electrons (i.e., an electric current).





# PHOTOVOLTAIC CELL



Uses: Used in calculators, electronic watches, street lights, water pumps to run radios and TVs.



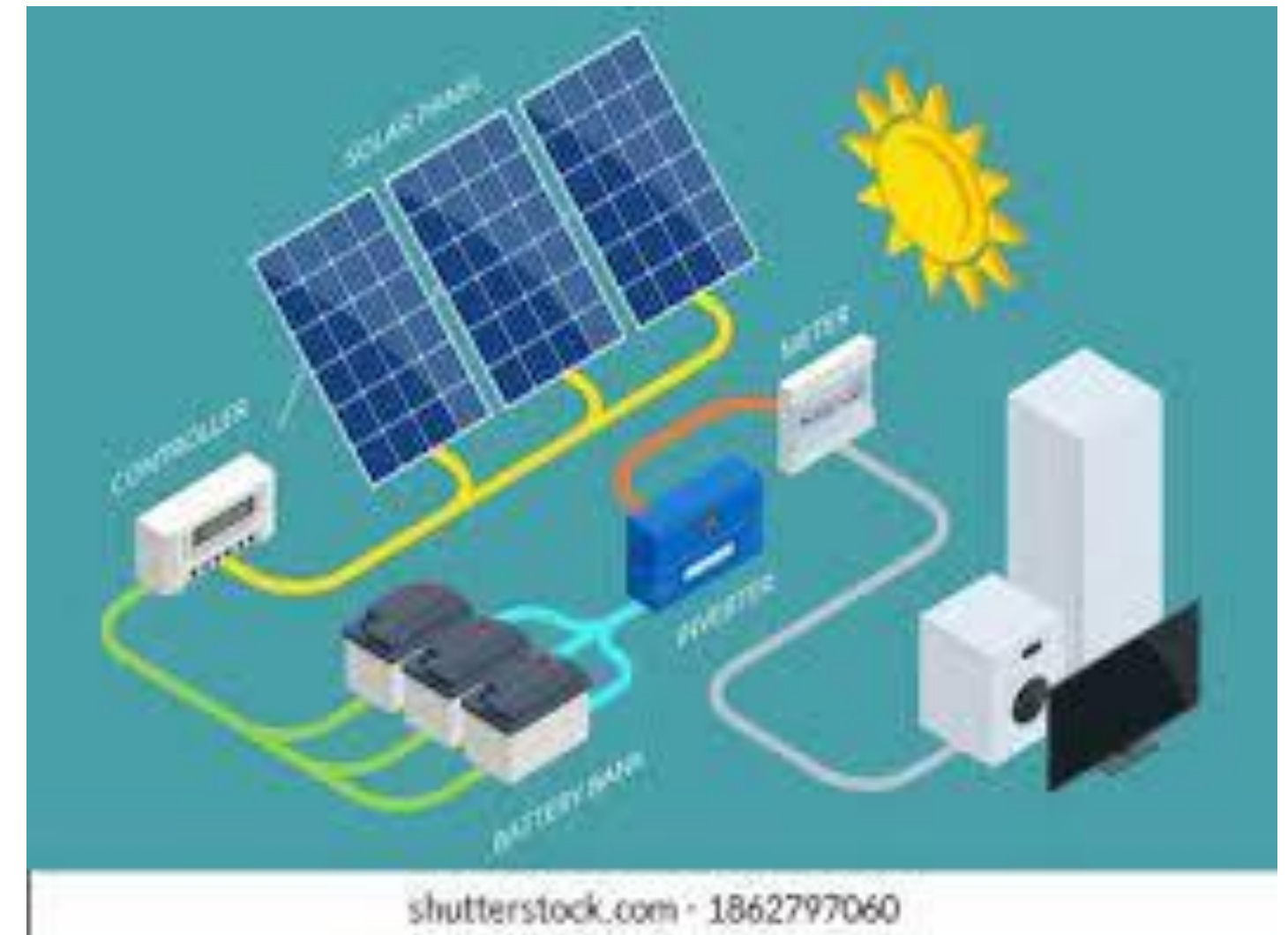




# SOLAR BATTERY



- When a large number of solar cells are connected in series it forms a solar battery.
- Solar battery produces more electricity which is enough to run water pump, to run street light, etc.
- They are used in remote areas where conventional electricity supply is a problem.







# SOLAR HEAT COLLECTORS



- Solar heat collectors consist of natural materials like stones, bricks or materials like glass,
- Can absorb heat during the day time and release it slowly at night



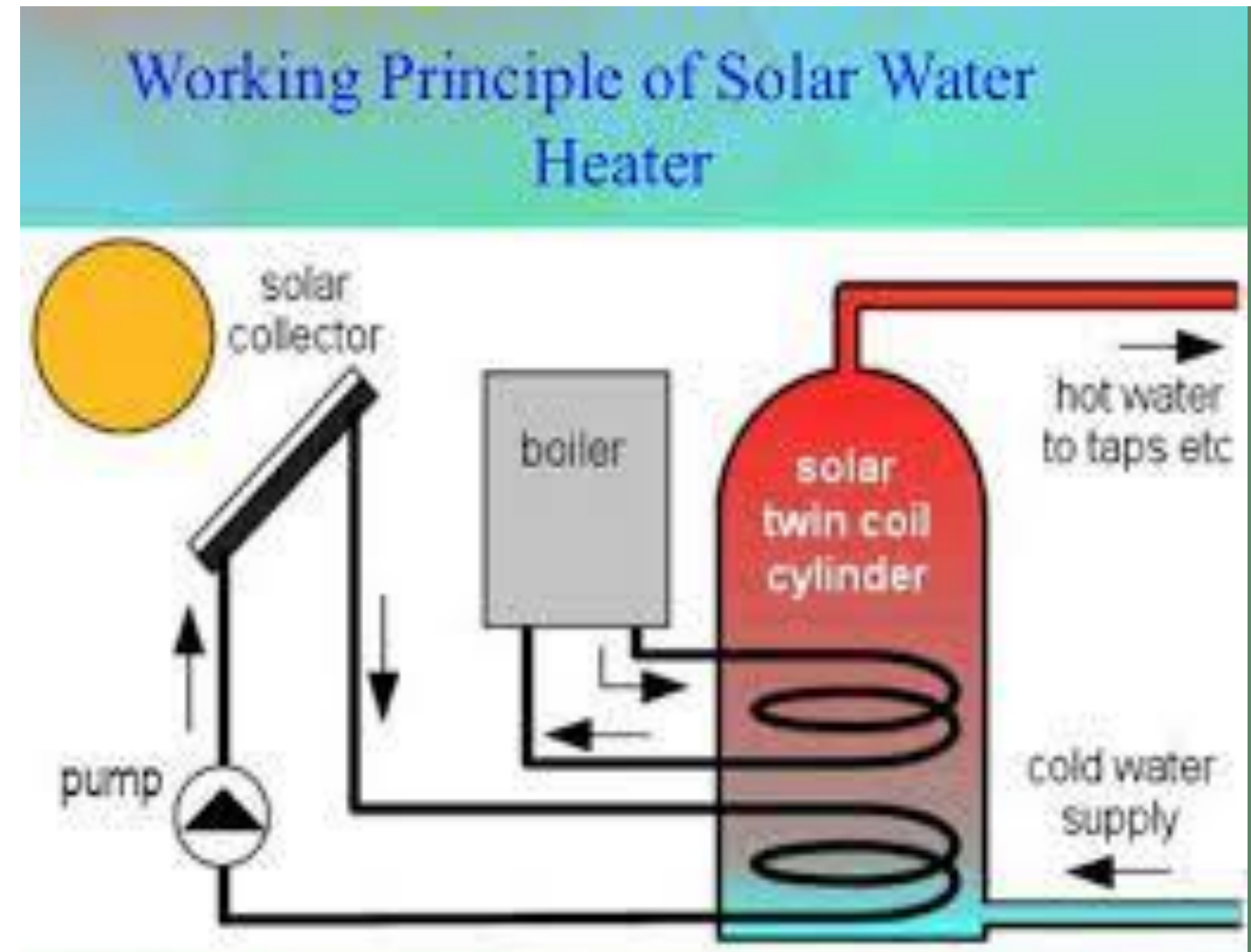




# SOLAR WATER HEATERS



- It consists of an insulated box inside of which is painted with black paint
- It is also provided with glass lid to receive and store solar heat.
- Inside the box it has black painted copper coil, through which cold water is
- allowed to flow in which gets heated up and flows out into a storage tank.
- From the storage tank water is then supplied through pipes.







# SOLAR ENERGY



## SOLAR ENERGY

Advantage	Disadvantage
Renewable & Pollution Free	Needs Lots of Space
Reduce Electricity Bill	High Initial Cost
Less to No Maintenance for Years	No Solar Power at Night & Cloudy Days
More Solar Energy in Summer	Less Solar Energy in Winter
Diverse Application	DC Equipment are Expensive
Can be Stored in Battery	Expensive Battery

**Electronics and You**



# ASSESSMENT



**List out the various uses of solar energy**





# SUMMARY



# REFERENCES



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2. G.Tayer Miller :Environmental Science”, Cenage Learning India Pvt Ltd, 2011.
3. Benny joseph, “Environmental science & engineering” Tata McGraw-Hill.Pub.Co.Ltd. New Delhi.2009.