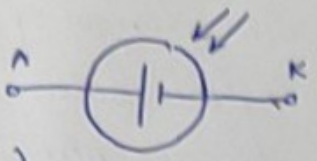
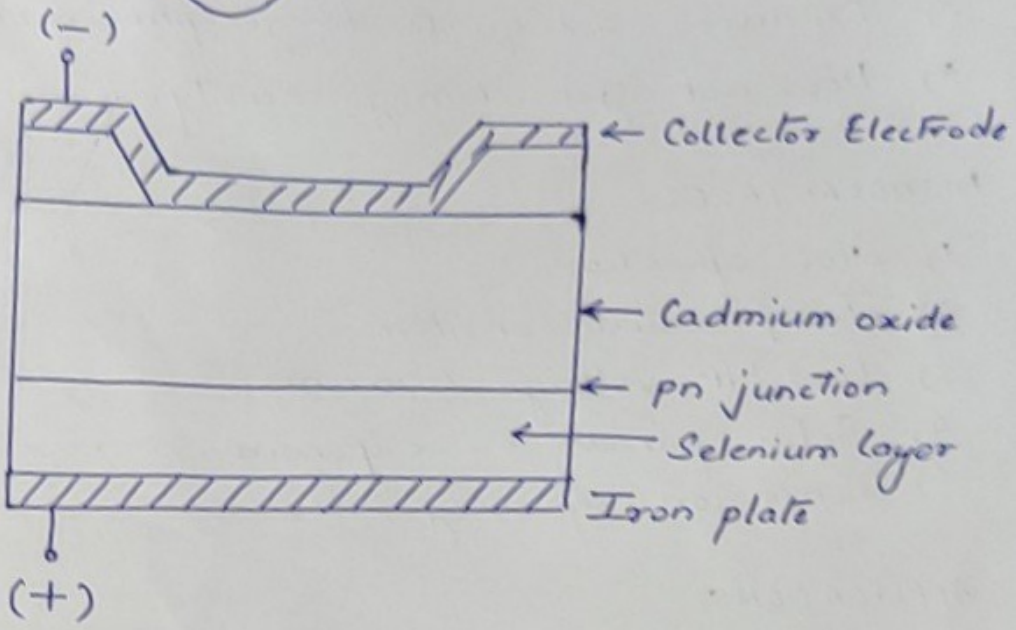
PHOTOVOLTAIC CELL OR SOLAR CELL:-

A photovoltaic cell generates voltage proportional to the intensity of incident light. The photovoltaic cell thus operates on the principle of photovoltaic effect.

Symbol:-



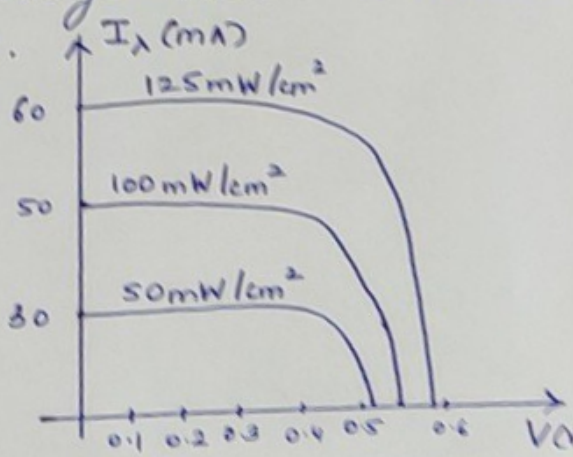
Construction:-



1.) The Se photovoltaic cell consist of a base plate made from iron or steel.
2.) This base plate acts as a +ve electrode.
3.) A Se layer is placed on the base plate made from iron or steel.
4.) This Se layer is sensitive to light and electrically conducting. CdO layer is deposited.
5.) This layer is transparent to light.
6.) The $e^{\ominus}$s and holes flow to constitute the photocurrent.
7.) This photocurrent produces a voltage V across the terminals.
8.) Thus solar cell supplies power.

Output Characteristics & Working:-

1.) When the incident illumination is 100 mW/cm^2 and if the cell is short circuited, then the O/P current is 50 mA but the O/P voltage is zero.
2.) Hence the O/P power is zero.



3.) When the cell is open circuited, then o/p voltage is 0.55V & the o/p current is 0.

4.) Therefore the o/p power is zero.

ADVANTAGES:-

1.) Respond well over a wide range of incident wavelength.
2.) External dc source not required.
3.) Produces adequate large photocurrent.
4.) Does not get damage easily.

DISADVANTAGES:-

1.) Slow operation
2.) Temperature sensitive
3.) Low o/p voltage & current
4.) Solar panels are expensive.
5.) Conversion efficiency is low.

APPLICATIONS:-

1.) Used in satellites and space vehicles.
2.) Power supply to calculator.
3.) Charging batteries.