

## MECHANICAL ENGINEERING

### 1.WHAT ARE SEMI-CONDUCTORS

Semi-conductors are materials that allows passage of electricity.

we have silicone, germanium and many more

The most used semiconductors are silicone and germanium.

They pass current more easily that why they are most preferred in our every day activities.

### 2.WHAT IS FERMI DISTRIBUTION

It's a law where indistinguishable particles can be distributed among a set of energy state .

This law was named after Fermi Enrico and Paul Dirac .

It is applied mostly in electrons.

It uses the principal of quantum mechanics.

It's part of field of statistical mechanics.

### 3.WHAT ARE P-TYPE AND N-TYPE SEMI-CONDUCTORS?

They are materials with atomic impurities.

They are intrinsic semiconductors doped with boron

N-Type has many electrons while P-Type has holes.

N-TYPE create chemical reaction during doping.

They both work together and are joined at P-N junction

### 4.EXPLAIN PROCESS FOR FABRICATING P-TYPE AND N-TYPE SEMI-CONDUCTORS

When you add impurities for example impurity atom with 3 valence electrons will produce a P-Type extrinsic semiconductors while pentovalent impurities impurity atom with 5 valence electrons will produce an N-Type extrinsic semiconductors. so these semiconductors are formed by doping a semiconductors by exposing them to other element.

### 5.WHAT IS P-N JUNCTION?

P-N junction separate P-Type and N-Type .

we can also say it's a material used to separate a conductor in a solar cell for example silicone.

P-N junction is formed through a process called doping.

P-N junction is an interface for two semiconductors.

### 6.WHAT IS THE DIFFERENCE BETWEEN PHOTO ELECTRIC EFFECT AND PHOTO VOLTAIC MECHANISM?

Photo electric effect is when light hits the material and it's emmited back while photo voltaic mechanism is a process where sunlight hits a material and is converted into electric energy.Example we have solar panels.

### 7.HOW BATTERIES ARE DIFFERENT FROM PHOTO VOLTAIC CELLS.

Batteries use chemical energy to generate electricity while photovoltaic cells convert energy of light directly into electricity by photovoltaic effect

### 8.WHAT ARE DIFFERENT TECHNOLOGIES USED FOR IMPROVING EFFECIENCY OF A VOLTAIC CELL?

Pyramidal lenses is one of the most efficient technology.

materials used to make panels for example monocrystalline silicone.

Reflection should be absorbed so the surfaces should be anti reflection coated

Texture of the panels also matter.

### 9.WHAT IS MULTI JUNCTION CELL?.

Multi junction cell is a material made up of semi-conductors which produces electric current in response to different waveline of light boosting performance.

#### 10.WHAT IS SHOCKLEY -QUESSER LIMIT?

It's the amount of electric energy a solar cell can extract from the source .