Based on the Composition of Semiconductors, they are classified into two types.

(1) Elemental Semiconductor
(2) Compound Semiconductor

1) Elemental Semiconductors:- It's made of Single element like Germanium and Silicon. They are also known as indirect band gap Semiconductors.

2) Compound Semiconductors :- It's made by Combining the third and fifth Column elements (or) Second and Sixth Column elements. Ex:- GaAs and InP.

Elemental Semiconductor	Compound Semiconductor
1) They are made of Single element. Ex:- Ge, Si, etc	They are made of Compounds Ex:- GaAs, GaP, CdS, etc
2) They are called as indirect bandgap Semiconductors. ie, electron-hole recombination takes place through traps, which are present in the band gap.	They are called as direct band gap semiconductor. ie, electron hole recombination takes place directly with each other.
3) Life time of charge carriers is more due to indirect recombination	Life time of charge carriers is less due to direct recombination.
4) Heat is produced due to recombination.	Photons are emitted during recombination.
5) Current amplification is more	Current amplification is less
6) They are used for the manufacture of diodes, transistors etc	They are used for making LEDs Laser diodes, IC's etc.

2) Difference between Intrinsic and Extrinsic Semi. - Conductor.

Intrinsic Semiconductor	Extrinsic Semi Conductor.
(i) Pure Semiconductor	Doped with impurity is called Extrinsic
(ii) The charge Carriers are Produced only due to thermal agitation.	Charge Carriers are Produced due to impurities and to produce thermal agitation.
(iii) low electrical Conductivity	high electrical Conductivity
(iv) low operating Temp.	high operating temp.
(v) At T=0K, fermi level exactly lies between Ec and Ev	At T=0K, Fermi level Closer to Conduction band in n-type, closer to Valence band in P-type
(vi) Ex:- Si and Ge	Ex:- Ph and Ar

3) Difference between n-type and P-type Semi

n-type	P-type
(i) Doping an intrinsic Semi Conductor with Pentavalent impurity.	Add in trivalent impu
(ii) e^-s are majority Carriers and holes are minority Carriers.	holes are majority Car and e^- are minority Ca
(iii) Donor energy level closer to Conduction band.	Acceptor energy level Valance band
(iv) When Temp is increased, these semiconductors Can easily donate an e^- from doner energy level to the Conduction band.	When Temp is increased Semiconductors Can ea accept an e^- from Valer to acceptor energy level