CENTRIFUGES

CENTRIFUGES

- A centrifuge is a device used to separate compounds of a mixture on the basis of their size, density, the viscosity of the medium , and the rotor speed.
- The process of separation of components with the help of centrifuge is called Centrifugation.

BASIS OF SEPARATION

- The separation of particles are mainly based on:-

1. Size
2. Shape
3. density

USES OF CENTRIFUGES

- A centrifuge is sued to separate particles or macromolecules like:-

1. Cells
2. Sub-cellular components
3. Proteins
4. Nucleic acids

PRINCIPLE OF CENTRIFUGATION

- The centrifuge involves principle of sedimentation , where the acceleration at centripetal force causes denser substances to separate out along the radial direction at the bottom of the tube.
- If there is no difference in density , the particles stay steady.
- To take advantage of even tiny differences in density to separate various particles in a solution gravity can be replaced with the much more powerful “Centrifugal force” provided by a centrifuge.

FACTORS INFLUENCING CENTRIFUGATION

1. Density of both samples and solution
2. Temperature/viscosity
3. Distance of particles displacement
4. Rotation speed

COMPONENTS OF CENTRIFUGES:-

1. A rotor
2. A drive shaft
3. A motor

TYPES OF CENTRIFUGES

- Many different type of centrifuges are commercially available including

1. Low speed centrifuge
2. High speed preparation centrifuges
3. Micro centrifuge
4. Ultracentrifuge
5. Refrigerated centrifuge
6. Vacuum centrifuges

APPLICATION OF CENTRIFUGATION

- Fractionation of vesicles
- To separate two miscible cells
- Purification of mammalian
- The clarification and stabilization of wine.
- Separating particles from an air flow using cyclonic separation.