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1. Discuss briefly filtration

 Filtration can be defined as the removal of solid particles from a fluid by passing the fluid through a filtering medium or sector on which the solid particles are being deposited. In the industry, it ranges between single straining to complex separations, the fluid maybe liquid or gas; as the solid particles may be of any shape, type, size or form.

1. For a pressure drop in series, state the equation applicable, stating all parameters.

 Since the flow is in series, like resistance, the pressure drop over the filter is the sum of individual pressure drop.

 $-ΔP=P\_{2}-P\_{3}=\left(P\_{a}-P^{'}\right)+\left(P^{'}-P\_{b}\right)=-ΔP\_{c}-DP\_{m}$
 where ;

 -𝞓P = Overall pressure drop

 -𝞓$P\_{c}$= Pressure drop over cake

 -𝞓$P\_{m}$= Pressure drop over medium

 $P\_{a}$= Inlet pressure

 $P\_{b}$= Outlet pressure

 $P^{'}$= Pressure at the boundary between cake and medium

1. State the types of filtration process
* Discontinuous pressure filters: It employs large pressure differentials across the septum to give economically rapid filtration of viscous liquids or fine solids. The common types include; filter presses, shell and leaf filters, and catridge filters.
* Continuous pressure filters: They are designed to remove the vapor cost required for filtration in batch or discontinuous pressure filters. They are always practicable especially when solids are very fine and filter very slowly or when the liquid has a high vapor pressure, is a saturated solution which will crystallize.