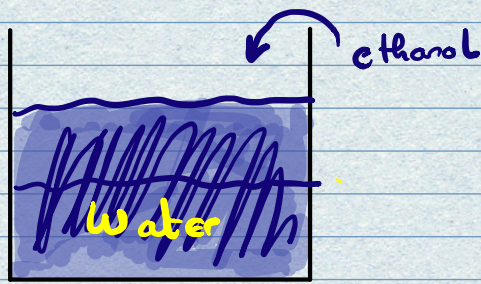
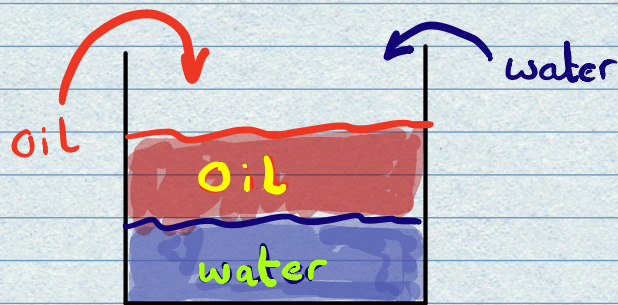


## Miscible liquids :-



## Immiscible liquid :-

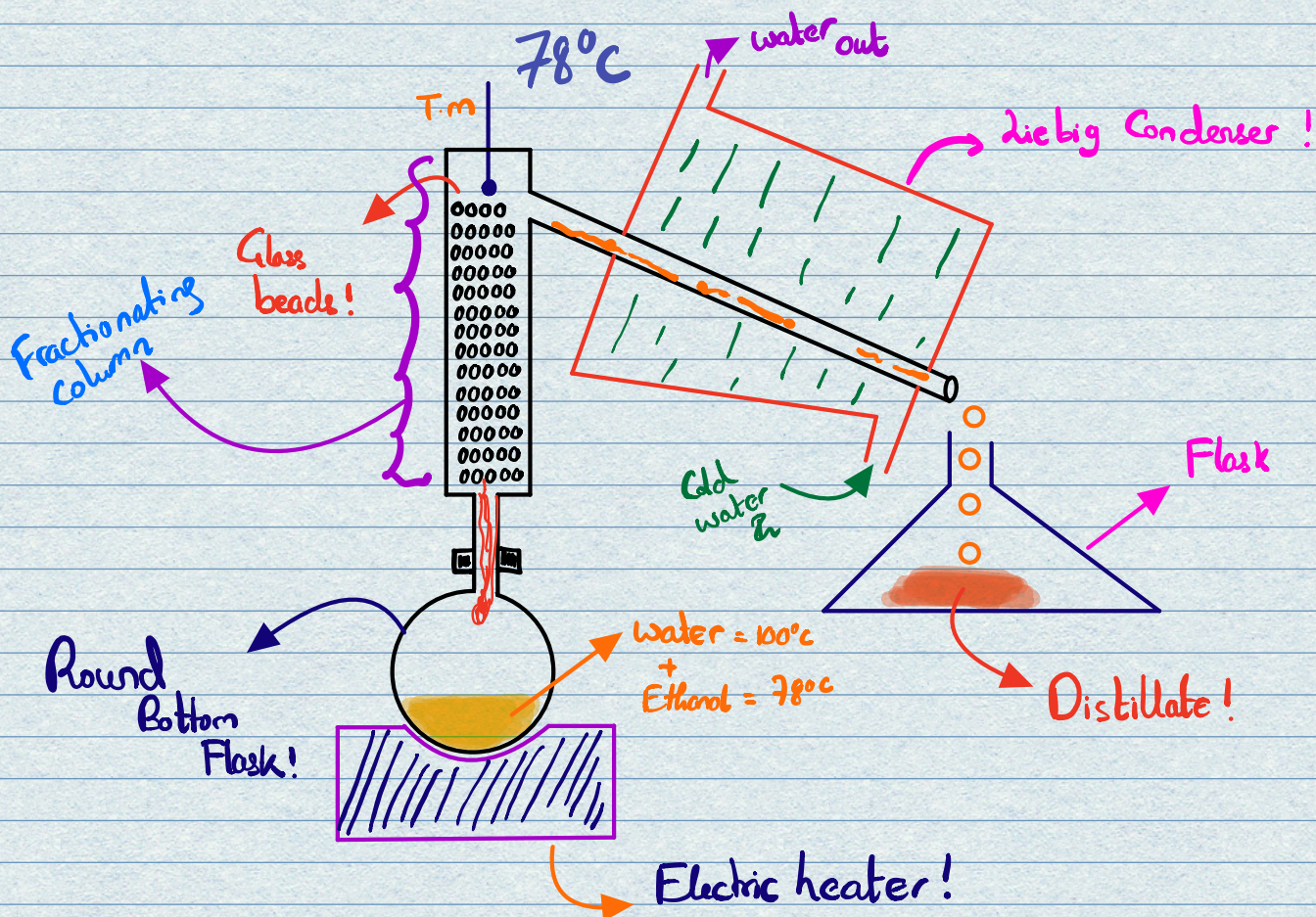


When two liquids are mixed and they do not form layers are called **Miscible liquids** (Ethanol + Water)

When two liquids are mixed and they form different layers are called **Immiscible liquid** (Oil + Water)

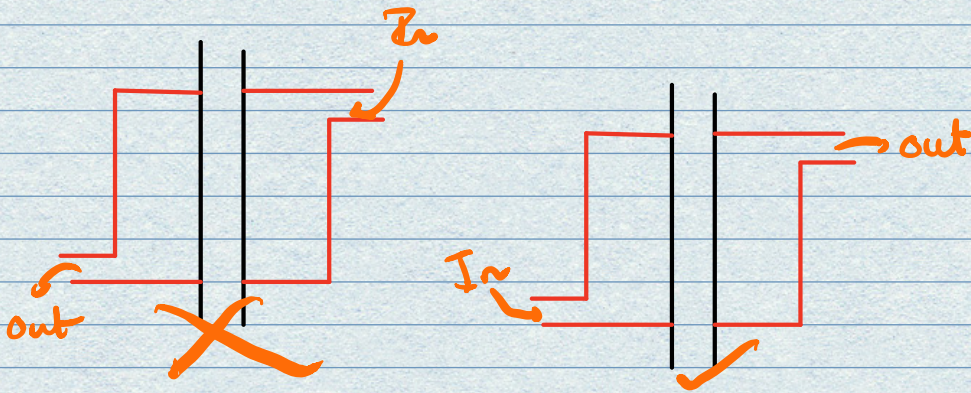
\* Reason for two immiscible liquid is different densities!

## Fractional Distillation of Two Miscible liquids

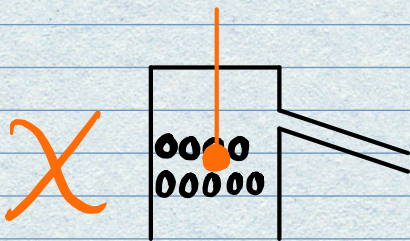


# Error in Apparatus :-

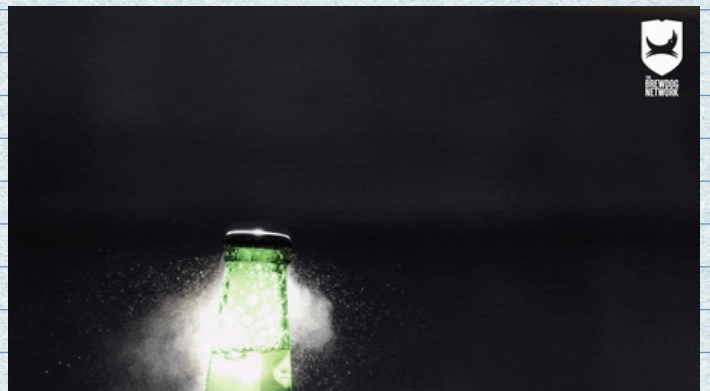
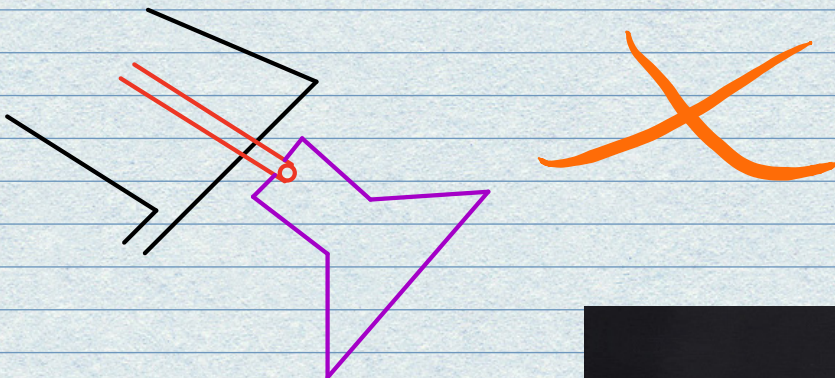
(i) Cold water in :-



(ii) Thermometer :-



iii) Air-Tight Apparatus



→ Separation technique in which two or more miscible liquids are separated because of different Boiling points is called **Fractional Distillation!**

→ **Indirect heat** is provided because :-

i) Direct heat will not provide uniform rise in temp!

ii) **Flammable liquids** may catch fire!

→ **Glass beads** provide large surface area for the vapours to condense back

→ **Leipzig Condenser** is used to convert vapours back into liquid

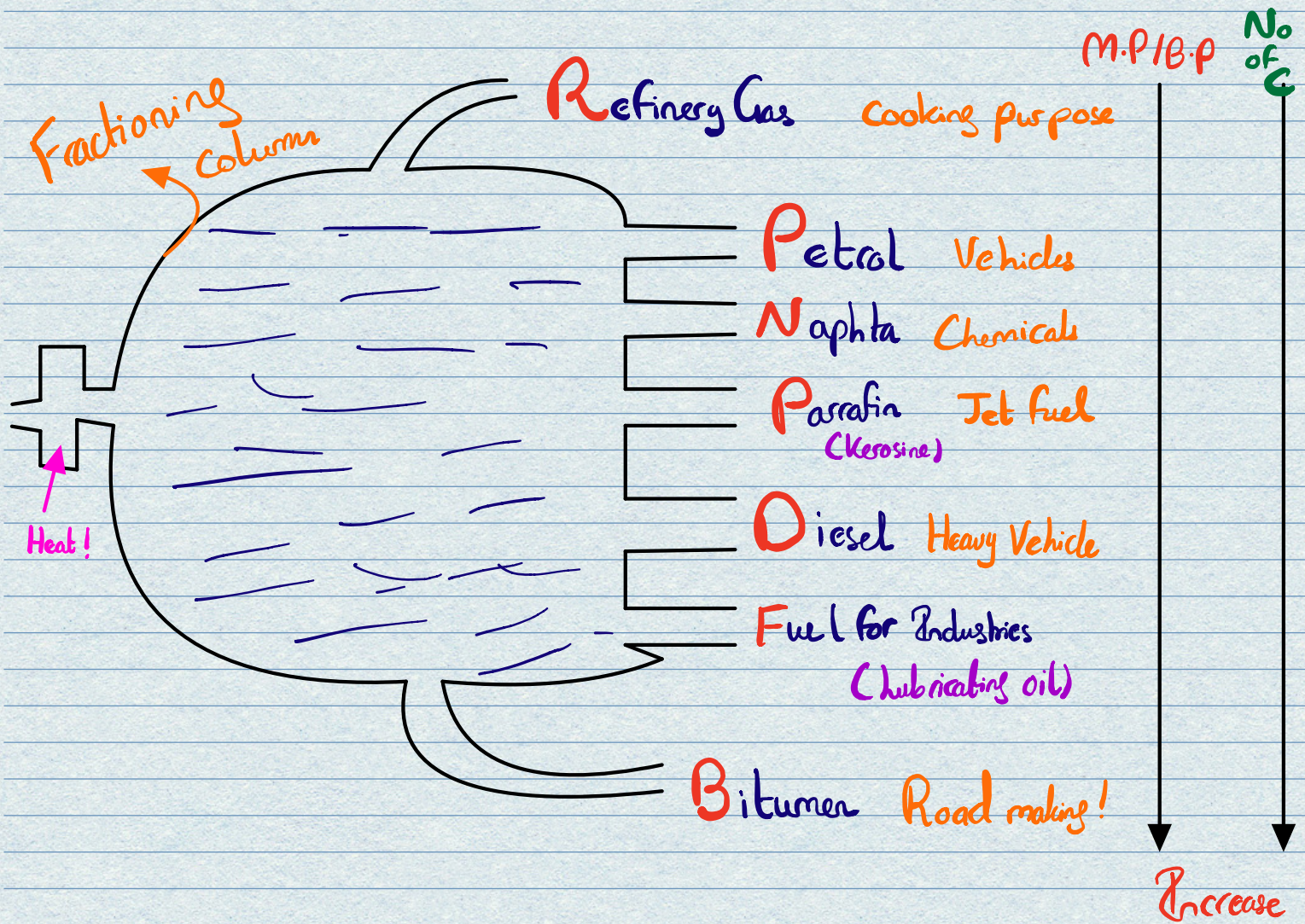
## **\* Errors in Apparatus**

o) Cold water in should be **against Gravity!**

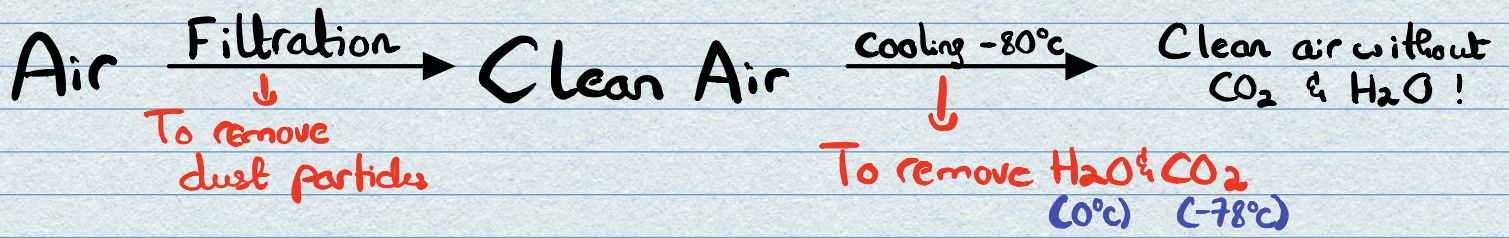
o) Thermometer should **not** touch the **Glass beads!**

o) Distilling apparatus should **not** be **Air-Tight!**

# Fractional Distillation of Crude Oil



# (iii) Fractional Distillation of liquid Air



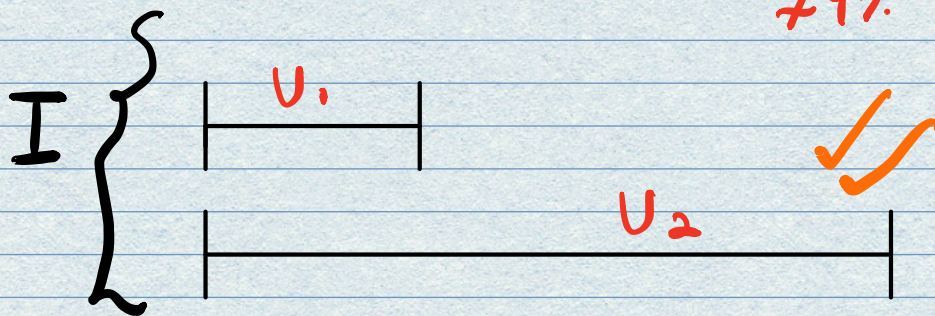
Air is compressed & cooled  $\rightarrow$  Compressed Cool Air

Air is Expanded & Cooled -200°C  $\rightarrow$  Liquid Air!

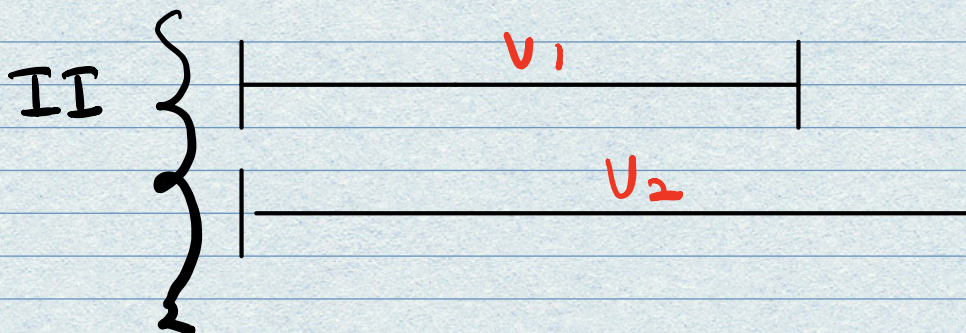


Fractional Distillation!

N<sub>2</sub> 79%  
O<sub>2</sub> 20%  
Noble Gases less than 1%



More expansion  
More cooling



Air is compressed when expand to increase cooling effect!

# ≈ SIMPLE Distillation ≈

Separation Technique in which solvent is separated from solution e.g:- Pure water from sea water

