

Subject: Pharmaceutical Engineering II (Pharm/T/424)

[Full Marks 70; Time: 3 hrs]

Answer Any Two of the following:

1. Discuss factors that affect filtration. Deliberate different laws of filtration. Discuss mechanism of filtration.

[5+5+10]

2. Discuss role of diffusion in mass transfer. Enumerate molecular diffusion. [10+10]

3. Draw vapor-composition diagram with its all details. Draw boiling point-composition diagram with its all details.
[10 + 10]

4. Write down construction, working, advantage and disadvantage of steam distillation. [20]

Answer Any One of the following:

1. A continuous fractionating column is to be designed for separation of 30000 kg/hr of a mixture of 40% benzene and 60% toluene into an overhead product (distillate) containing 97% w/w benzene and a bottom product containing 98% toluene. The reflux ratio is 3.5 and the feed will be liquid at its B.P.

(a) Calculate moles of feed, distillate and moles of waste product.

(b) Determine the number of theoretical plates and the position of feed plate. [15+ 13+ 2]

Equilibrium data:

x	0	0.07	0.14	0.21	0.30	0.37	0.44	0.51	0.58	0.65	0.71	1
y	0	0.16	0.28	0.39	0.50	0.59	0.67	0.74	0.80	0.85	0.90	1

2. With a diagram, elaborate working, construction, advantage, disadvantage of rotary drum filter. [12 + 12 +3 +3]