

F.1

An aqueous stream contains 3.25 g A/100 g water, which is to be extracted with one-third the mass of methylene chloride (CH_2Cl_2). The following data are available for the equilibrium of A between water and methylene chloride.

<u>g A/100 g water</u>	<u>g A/100 g CH_2Cl_2</u>
0.125	0.46
0.25	0.83
0.5	1.55
1.0	3.86
1.5	7.0
2.0	10.8

What is the number of equilibrium stages required to recover 98% of A?

F.2

A fermentation broth contains 100 mg/L nisin, which is to be extracted with butyl acetate (BA). An extractor with 6 stages is available for the extraction. The following data are available for the equilibrium of nisin between water and BA.

<u>mg nisin/L water</u>	<u>mg nisin/L BA</u>
10	23.6
20	36.8
30	53.5
50	77.5
70	98.4
90	117

The objective of the extraction is to recover 97.5% of the nisin. What is the minimum S/F ratio necessary to accomplish this extraction?