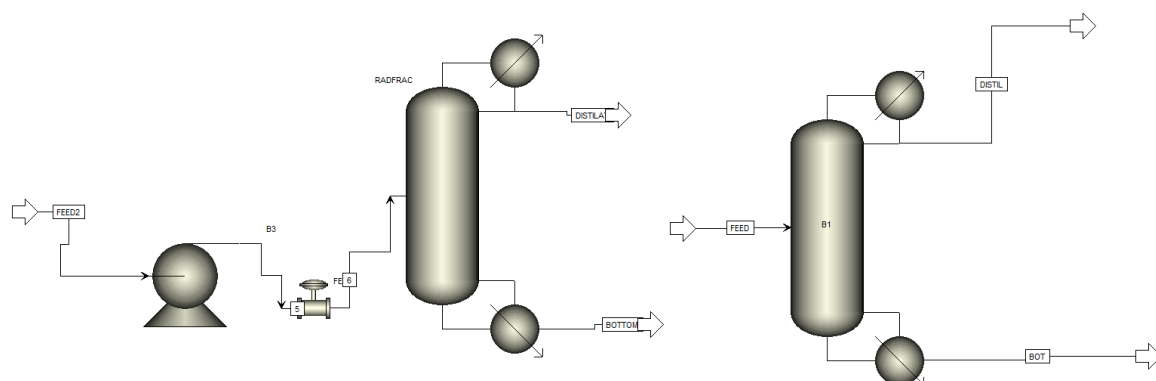


# CHE213 Simulation 5

Aryan Nigam

220227

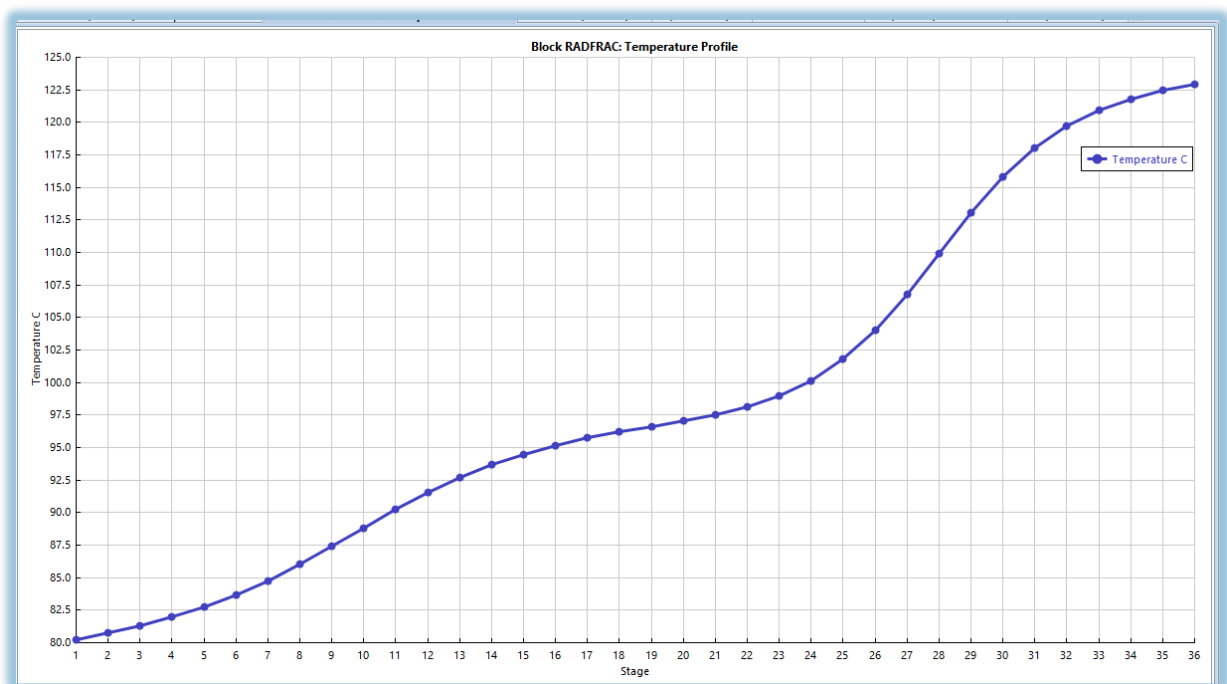


## Data:

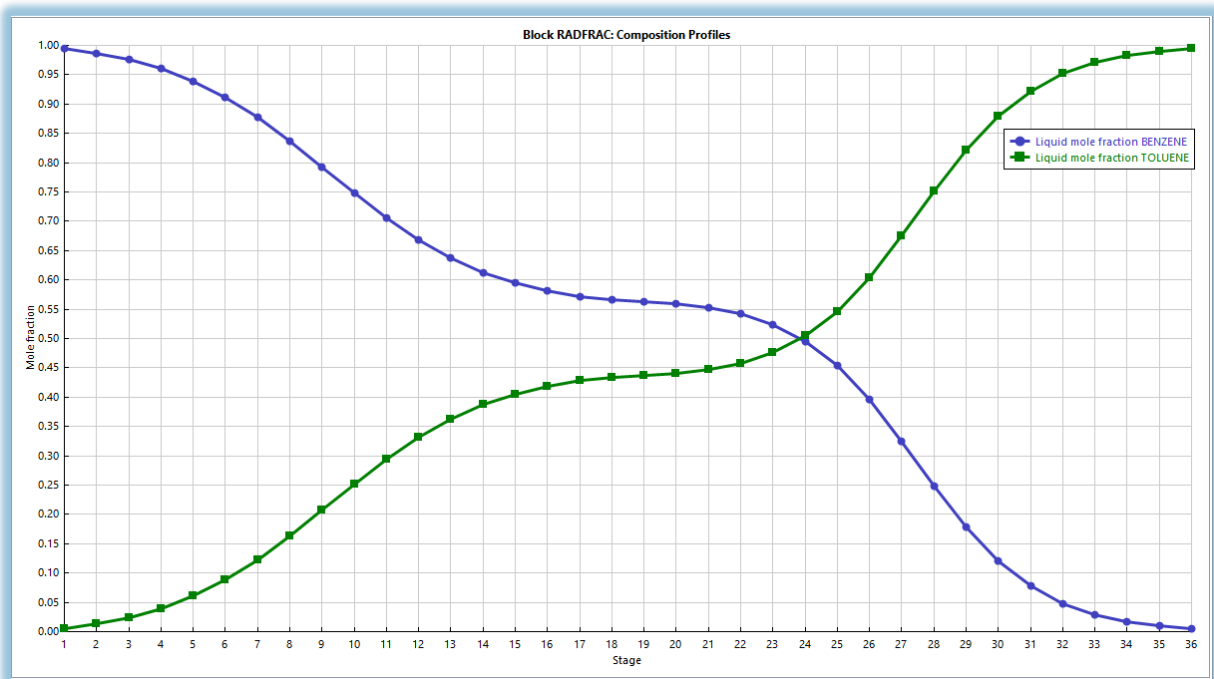
Temperature stage wise

Stage	Temp(°C)
1	80.25056
2	80.74271
3	81.30441
4	81.96105
5	82.74105
6	83.67081
7	84.76578
8	86.01913
9	87.39326
10	88.82143
11	90.22263
12	91.52366
13	92.67648
14	93.66343
15	94.49137
16	95.18146
17	95.75987
18	96.25195
19	96.62014
20	97.03348
21	97.52506
22	98.1486
23	98.98694
24	100.1565
25	101.7947

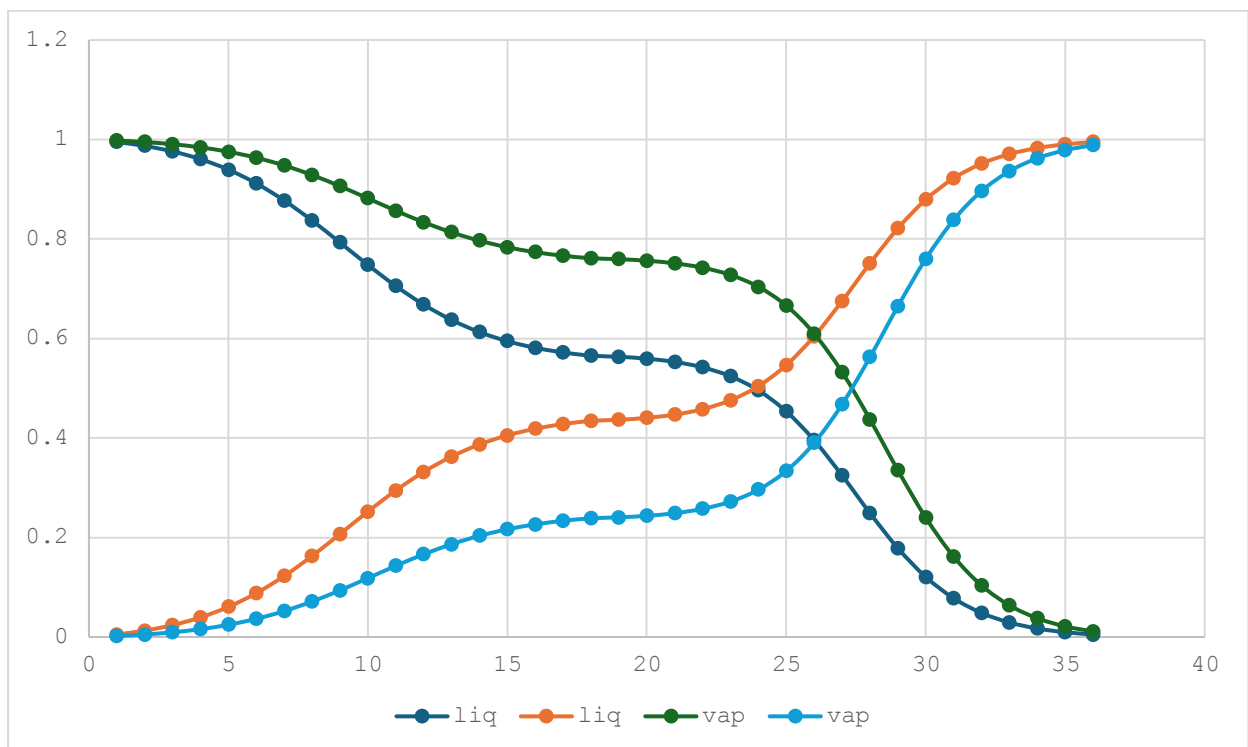
26	104.0098
27	106.7902
28	109.9281
29	113.0592
30	115.8303
31	118.0516
32	119.7158
33	120.9227
34	121.7978
35	122.4496
36	122.9578



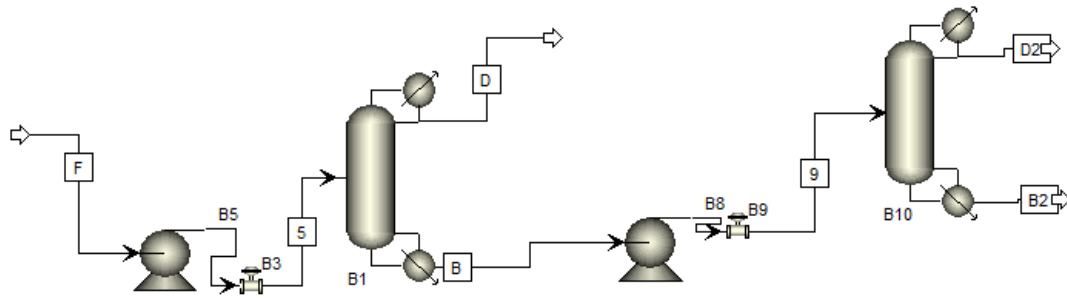
## Composition Liquid phase



## Composition Vapor phase

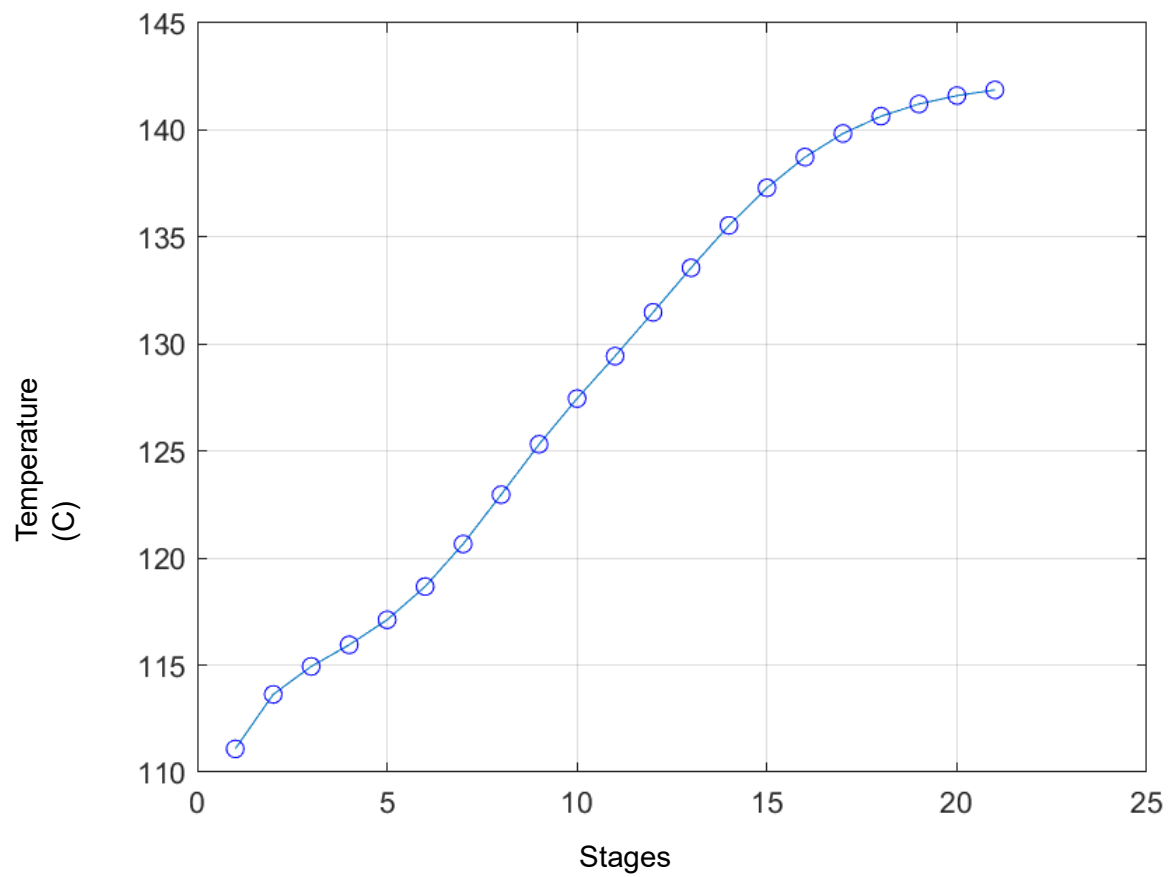


Q2

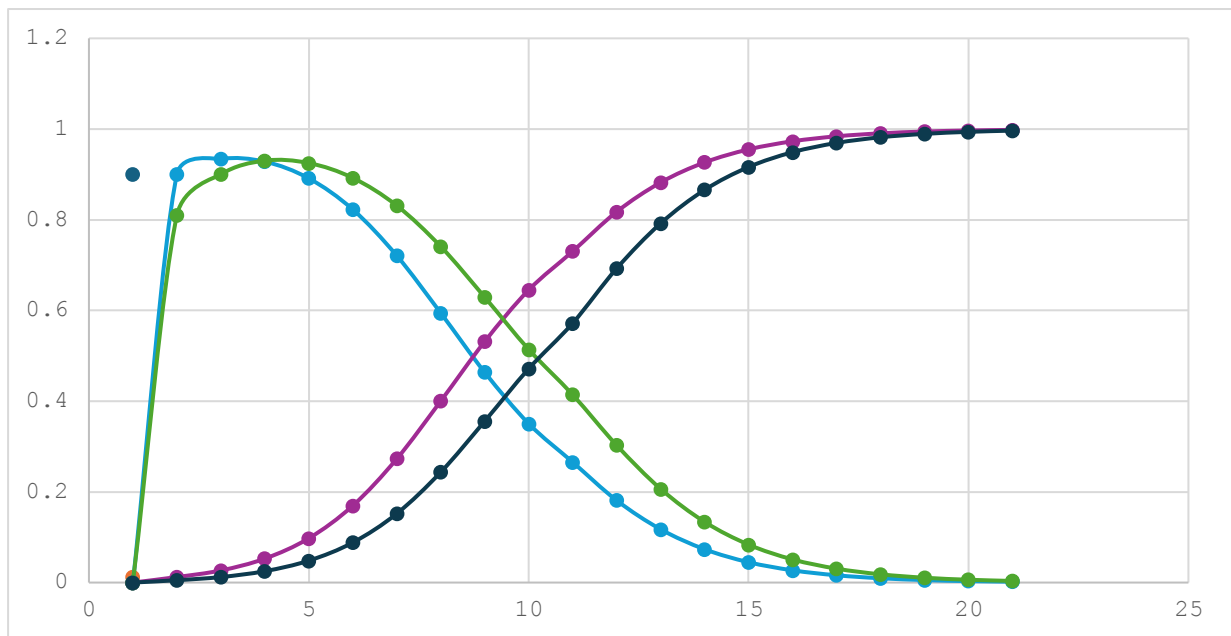


→ Not actual diagram as in my aspen file, taken as reference

Stage	Temp(°C)
1	111.087
2	113.6347
3	114.9411
4	115.9495
5	117.1192
6	118.6714
7	120.6601
8	122.9636
9	125.3192
10	127.4539
11	129.4363
12	131.4804
13	133.5607
14	135.5469
15	137.2996
16	138.7347
17	139.8378
18	140.6453
19	141.2153
20	141.6074
21	141.8725



### Composition Liquid/Vapor phase



# B1

B1 (RadFrac) - Stream Results (Boundary) × B1 (RadFrac) - Results × Main Flowsheet × B10 (RadFrac) - Results ×

Summary Balance Split Fraction Reboiler Utilities Stage Utilities Status

Basis: Mole

Condenser / Top stage performance

Name	Value	Units
Temperature	82.985	C
Subcooled temperature		
Heat duty	-153212	cal/sec
Subcooled duty		
Distillate rate	27.2249	kmol/hr
Reflux rate	48.8014	kmol/hr
Reflux ratio	1.79253	
Free water distillate rate		
Free water reflux ratio		

Reboiler / Bottom stage performance

Name	Value	Units
Temperature	131.407	C
Heat duty	257521	cal/sec
Bottoms rate	72.7751	kmol/hr
Boilup rate	109.908	kmol/hr
Boilup ratio	1.51025	
Bottoms to feed ratio		

Obtained mole fraction for Benzene is 0.995

## Condenser:

Temperature = 82.985 C

Heat duty = -153212 cal/sec

Reflux ratio = 1.79253

## Reboiler:

Temperature = 131.407 C

Heat duty = 257521 cal/sec

## B2

B10 (RadFrac) - Results

Summary

Balance

Split Fraction

Reboiler

Utilities

Stage Utilities

Status

Basis

Mole

Condenser / Top stage performance

	Name	Value	Units
	Temperature	111.155	C
	Subcooled temperature		
	Heat duty	-738456	cal/sec
	Subcooled duty		
	Distillate rate	33.1395	kmol/hr
	Reflux rate	300.409	kmol/hr
	Reflux ratio	9.06499	
	Free water distillate rate		
	Free water reflux ratio		
	Distillate to feed ratio		

Reboiler / Bottom stage performance

	Name	Value	Units
	Temperature	148.647	C
	Heat duty	738850	cal/sec
	Bottoms rate	39.6354	kmol/hr
	Boilup rate	310.302	kmol/hr
	Boilup ratio	7.82892	
	Bottoms to feed ratio		

Obtained mole fraction for Toluene is 0.9

Obtained mole fraction for Benzene is 0.91

### Condenser:

Temperature = 111.155 C

Heat duty = -738456 cal/sec

Reflux ratio = 9.06499

### Reboiler:

Temperature = 148.647 C

Heat duty = 738850 cal/sec