



Road Map

- Today & Friday Multi-unit DOF
- Starting Monday DOF with reactions
- Career Fair next Wednesday
 - We will still hold class Wed & Fri
- 2 weeks from today Review for Exam 1
 - 3-hr closed-book take-home (must be continuous)
 - One 8 ¹/₂ by 11 page of notes permitted (one-sided)
 - Handed out Wed (Sept 28)
 - Due Mon (Oct 3) --- Conference Weekend





































Step 3. DOF analysis on each subunit							
Subunit	Unknowns	# unknowns	# balance eqns.	# other relations	DOF		
Unit 1							
Splitter							
Unit 2							
Mixer							
Overall							

Step 4

Start finding desired unknown variables using boxes with 0 DOF











Subunit Unknow	ns # unknowns	# balance	# other	DOF
		99.10.	relations	
Mixer				
Unit 2				
Overall				

Now Do the DOF Analysis

Subunit	Unknowns	# unknowns	# balance eqns.	# other relations	DOF
Unit 1	m _{A,1} ,m _{B,1}	2	2		0
Mixer	m _{A,1} ,m _{B,1} , m _{A,2} ,m _{B,2}	4	2		2
Unit 2	m _{A,2} ,m _{B,2} m _{A,3} ,m _{B,3}	4	2		2
Overall	m _{A,3} ,m _{B,3}	2	2		0



Strategy?						
Subunit	Unknowns	# unknowns	# balance eqns.	# other relations	DOF	
Unit 1	m _{A,1} ,m _{B,1}	2	2		0	
Mixer	m _{A,1} ,m _{B,1} , m _{A,2} ,m _{B,2}	4	2		2	
Unit 2	m _{A,2} ,m _{B,2} m _{A,3} ,m _{B,3}	4	2		2	
Overall	m _{A,3} ,m _{B,3}	2	2		0	





DOF Analysis							
Subunit	Unknowns	# unknowns	# balance eqns.	# other relations	DOF		
Column							
Splitter							
Overall							

DOF Analysis							
Subunit	Unknowns	# unknowns	# balance eqns.	# other relations	DOF		
Column	O,R,B	3	2	0	1		
Splitter	O,R,D	3	1	1	1		
Overall	B,D	2	2	0	0		













DOF analysis on each subunit							
Subunit	Unknowns	# unknowns	# balance eqns.	# other relations	DOF		
Unit 1	A,B,C, x _{C,i} (4 of 5)	7	5	0	2		
Unit 2	C,D,E, x _{C,i} (4 of 5)	7	5	0	2		
Overall	A,B,D,E	4	5	0	-1		

Overspecified! Let's see if numbers are consistent!

43

Г