

Exercises Cellular Manufacturing

Exercise 5: (from Askin Standridge p. 200)

6.9. Consider the 10-part, 12-machine data of Table 6.11. Find any natural groupings of parts and

machines. Suggest a set of part/machine groupings and sketch a diagram showing how the groups would be located with respect to one another. Only one machine of each type is to be used.

Exercise 6: (from Askin Standridge p. 202)

6.21. Apply the hierarchical clustering heuristic to suggest groups for the problem described in Table 6.11.

Table 6.11 Part Routings for Problem 6.9

Part	Sequence of Machines Visited
1	10, 7, 8, 9
2	1, 3, 5, 4, 11
3	6, 12, 2
4	4, 11, 3
5	6, 4, 3, 1
6	9, 8, 7, 12
7	6, 4, 1, 11
8	5, 4, 3, 11
9	10, 9, 8
10	7, 10, 9, 8, 12

Exercise 7: (from Askin Standridge p. 201)

6.13. Eleven components are to be manufactured on five machine types. Utilizations are given in Table 6.13. Machines are semiautomatic; a worker can operate up to three machines. Determine a set of single-worker manufacturing cells.

Table 6.13 Machine Utilizations for Problem 6.13

Machine Type	Component										
	1	2	3	4	5	6	7	8	9	10	11
A	0.2			0.4		0.2			0.2	0.4	
B		0.7	0.3		0.4	0.2					0.1
C	0.5		0.8		0.2				0.1		
D	0.3			0.2		0.4					
E			0.5	0.3			0.7	0.1			

also possible: problems 6.12, 6.14, 6.15, 6.16, 6.22 from Askin Standridge.