Hungarian algorithm

Name: _____ Date: _____

6 questions | 17 marks

1. For the matrix rows $\begin{bmatrix} 8 & 5 & 7 \\ 6 & 9 & 4 \\ 3 & 7 & 6 \end{bmatrix}$, perform row reduction. [3 marks]

2. For the reduced matrix $\begin{bmatrix} 3 & 0 & 2 \\ 2 & 5 & 0 \\ 0 & 4 & 3 \end{bmatrix}$, is a further column reduction needed? Find a complete zero assignment. [2 marks]

3. Use the Amy/Ben/Cal table to show why two independent zeros are not enough for a complete allocation. [3 marks]

Times in hours for one person to perform one task.

Person	X	Y	Z
Amy	4	1	3
Ben	2	0	5
Cal	3	2	2

4. Zeros are covered by row 3 and column 2 in $\begin{bmatrix} 2 & 0 & 2 \\ 1 & 0 & 5 \\ 0 & 0 & 0 \end{bmatrix}$. Carry out the adjustment. [4 marks]

5. For the original Amy/Ben/Cal table, compare the algorithm's 5-hour assignment with Amy→X, Ben→Y, Cal→Z. [2 marks]

Times in hours for one person to perform one task.

Person	X	Y	Z
Amy	4	1	3
Ben	2	0	5
Cal	3	2	2

6. A student draws one line through every row, covering all zeros in any 3×3 reduced matrix, and immediately stops. Explain the error. [3 marks]