Practice worksheet | Matrix models

Network/adjacency matrices

Name: _____ Date: _____

6 questions | 20 marks

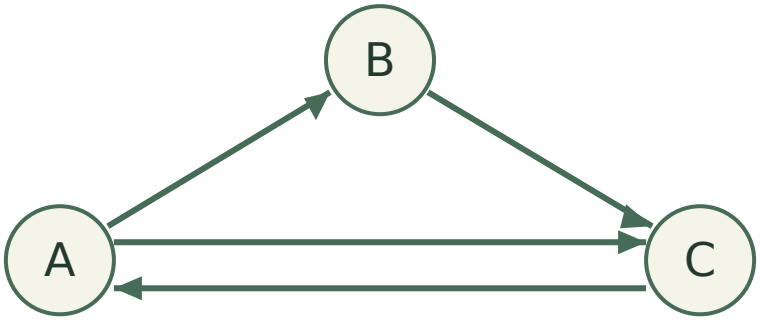
1. Construct the adjacency matrix, ordered A,B,C, for A→B, B→A, B→C and C→C. [3 marks]

2. Rows P,Q,R are $\begin{pmatrix} 0 & 2 & 0 \\ 0 & 0 & 1 \\ 1 & 0 & 0 \end{pmatrix}$. Entries count direct bus services. Interpret the 2. [3 marks]

3. Rows A,B,C are $\begin{pmatrix} 0 & 1 & 1 \\ 1 & 0 & 0 \\ 1 & 0 & 0 \end{pmatrix}$. Can this represent an undirected network? List its links. [3 marks]

4. Explain why zero diagonal entries do not rule out cycles. [3 marks]

5. Use the diagram and vertex order A,B,C. [5 marks]



Each arrow is one permitted move.

(a) Write its adjacency matrix using row=start. [3 marks]

(b) How many arrows leave A and arrive at C? [2 marks]

6. Someone swaps the first two rows of an A,B,C adjacency matrix but not its columns, then calls both orders B,A,C. Explain the error. [3 marks]