1. Find multipath maximum flow for the pair \((s,t)\) with \(q = 3\):

2. In the same network, find the maximum surviving flow for the same pair.

3. Find the cut tree in the same network

4. Using these are values for \(r_{i,j}\) [those not present are equal to 0], solve the synthesis problem using (i) spanning tree type algorithm and (ii) using only the node potential type algorithm.