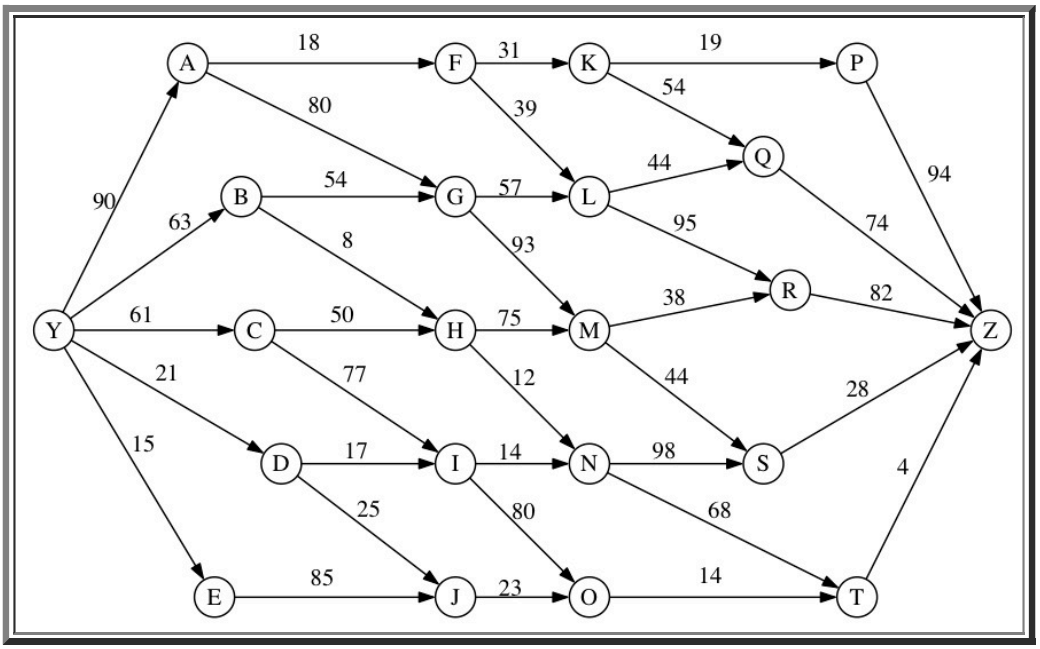
CS302 Final Exam, December 9, 2014 - James S. Plank

Question 1

Below is a graph on which we apply the Ford-Fulkerson network flow algorithm from source Y to sink Z.



Let us suppose that the first augmenting path we find through the graph is (Y → C → H → N → S → Z).

- **Part A:** Could this be a path found by the Edmonds-Karp algorithm? (yes or no - no explanation, please).
- **Part B:** Could this be a path found by the Modified Dijkstra algorithm that finds the maximum flow path? (yes or no - no explanation, please).
- **Part C:** When we process this path, which edge gets deleted? Circle the answer on the answer sheet.
- **Part D:** When we process this path, circle all of the edges (on the answer sheet) that get added to the residual graph.
- **Part E:** What is the flow of these edges (again, circle the answer on the answer sheet)?
- **Part F:** When we're done with the algorithm, the final residual graph is drawn below. On the answer sheet, circle the edges that compose the minimum cut of the original graph.
- **Part G:** What is the maximum flow through the graph (again circle the answer on the answer sheet):