

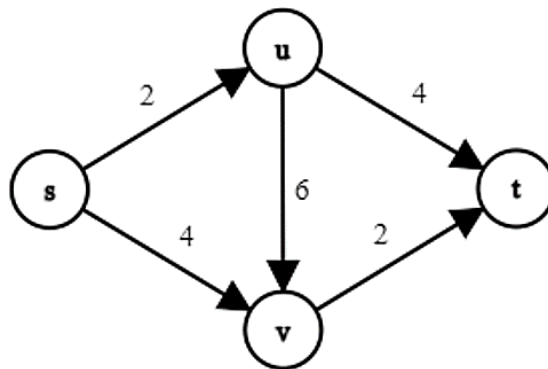
Habib University

CS 412: Design and Analysis of Algorithms

Spring 2024 – Quiz 03 – L2

March 14, 2024. Time: 25 minutes. Total points: 05.

1. [2 points] Let f be a flow in a flow network $G = (V, E)$ with a source s and a sink t . Argue that $|f| = c(S, T)$, for some $cut(S, T)$ of $G \Rightarrow f$ is a maximum flow in G .
2. [2 points] Consider the following directed graph G . Find the min-cut using the Ford–Fulkerson method.



3. [1 point] True/False. When the Ford-Fulkerson method terminates, each back-flow edge from v back to u in the residual graph represents the final flow value for edge (u, v) in the flow graph. Justify your choice in one to two sentences only.