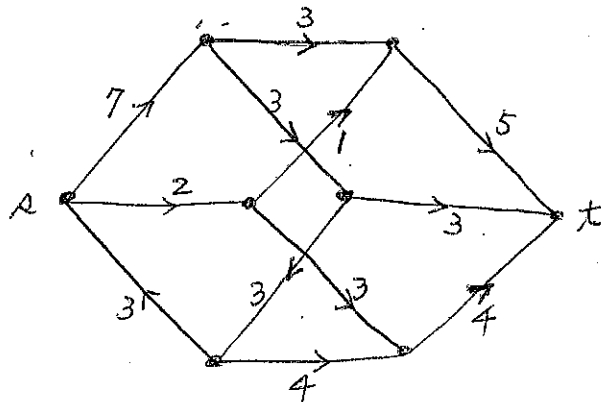


Graph Theory Exercise II

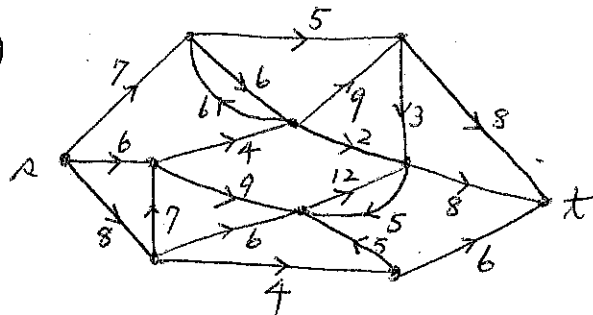
Due Nov. 13, 2025

1. Find a proof of the Menger's Theorem. (In details)
2. Find at least two distinct proofs of the Hall's Theorem.
3. For the circulant graph $G(n; \{1, 2\})$, find its vertex cover number, independence number and domination number respectively.
4. Find the maximum flow of the networks from s to t listed below.

(a)



(b)



5. Find $R(3, 4)$ and $R(3, 3, 3)$.
6. Bonus Problem: Say something you know about $R(5)$.