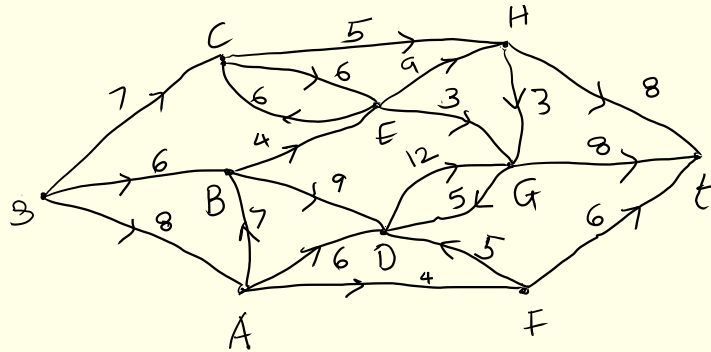


# Assignment 5

## Flows and circulations

Q.1 Construct a maximum flow for :



Q.2 Let  $G$  be a (simple) bipartite graph with minimum degree  $\delta(G)$  and maximum degree  $\Delta(G)$ . Prove that the edges of  $G$  can be coloured by  $\delta(G)$  colours so that every vertex has an edge with each colour and by  $\Delta(G)$  colours such that the colours that occur on edges at a vertex are all distinct.

Q.3 Use flows to prove König's theorem for bipartite graphs.

Q.4 (Reading assignment. No need to write anything for this question!)

Read section 4.3.16 of Douglas West's book to understand how to determine if a team  $X$  can still win IPL 2021 given the known results!