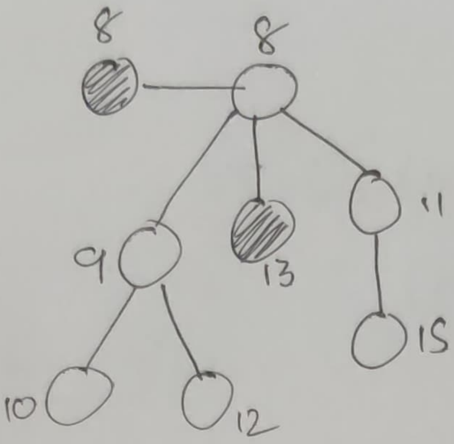
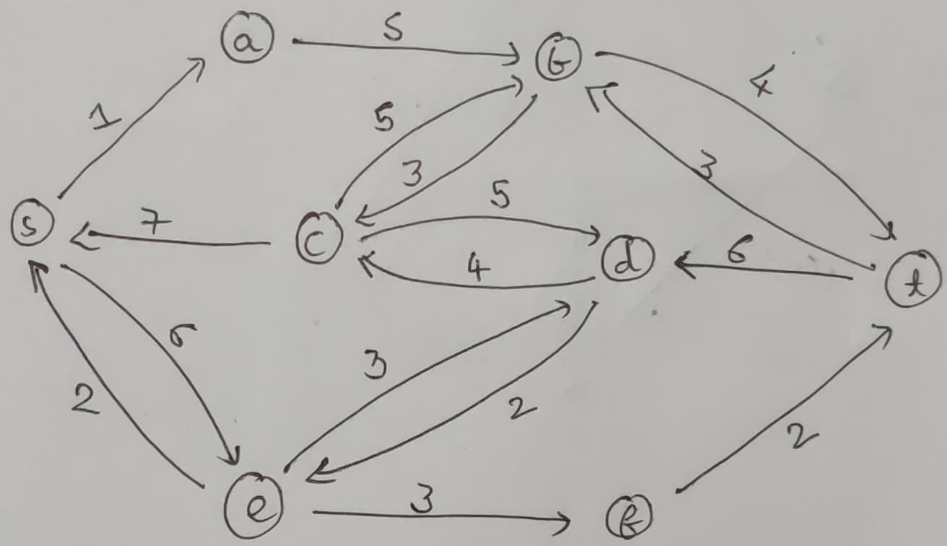
NISARG UPADHYAYA 19CS30031 ALGO 2 CT-1

A1)

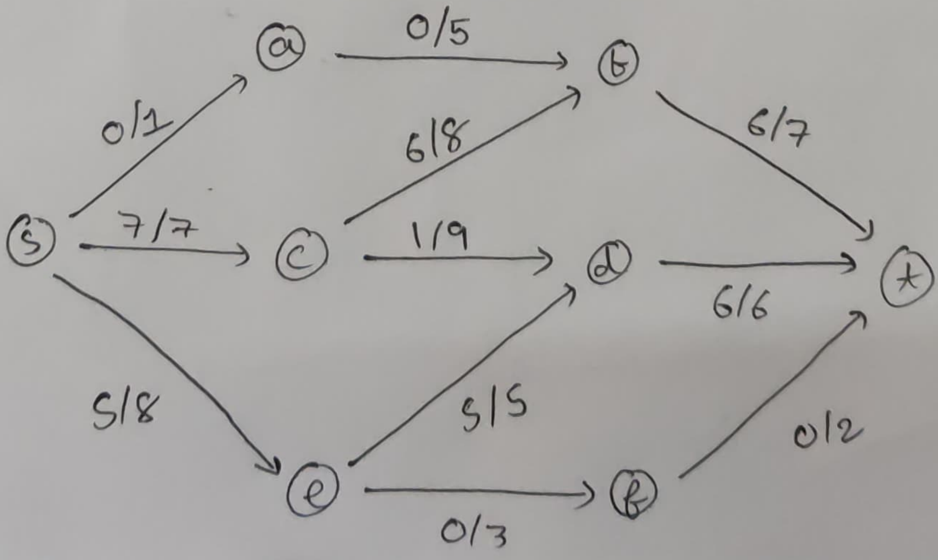


A2) (i)



(ii) $s \to e \to d \to c \to b \to t$

(iii)



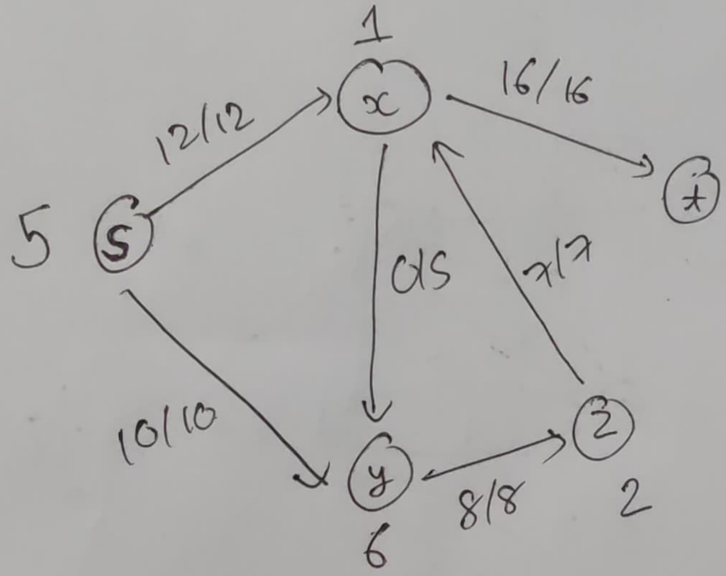
A3)

1. Relabel (z)

2. Relabel (y)

3. ~~Relabel~~ Push (z, x)

4. Push (x, t)

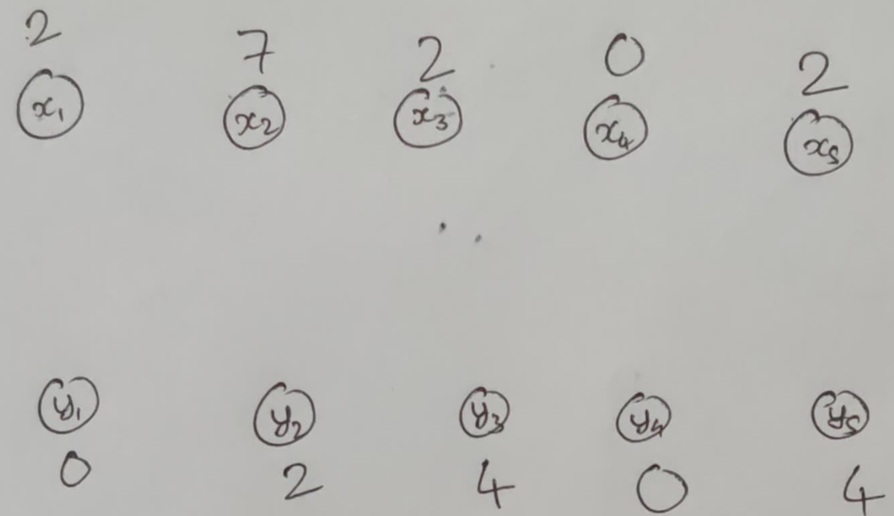


A4)

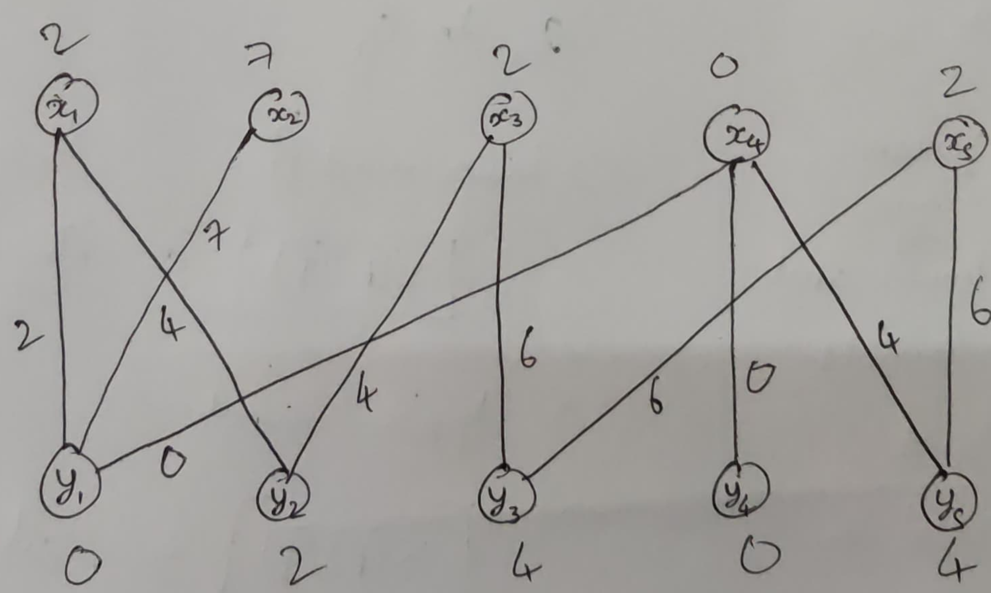
$$\alpha = \min\begin{pmatrix} 4+0-2, & 4+0-0, & 4+0-0, & 4+0-1, \\ 2+0-0, & 2+0-0, & 4+0-0, & 4+0-0 \end{pmatrix}$$

$$= \min\begin{pmatrix} 2, & 4, & 4, & 3, \\ 2, & 2, & 4, & 4 \end{pmatrix} = 2$$

Relabeled values



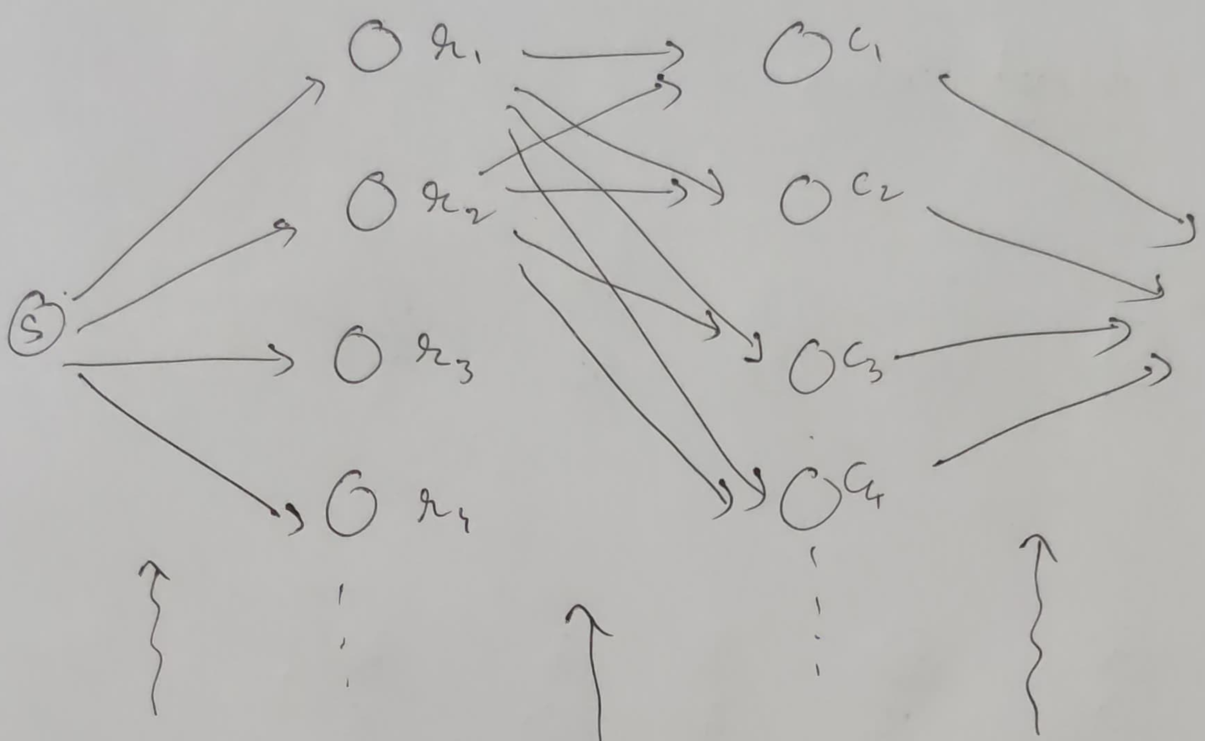
Equality graph



A5)

We create a column of nodes for each row.

And one for each column.



Edge capacity = sum of i^{th} row

Edge capacity from r_i to c_j

Edge capacity = sum of i^{th} column

* Solve INTEGRAL flows with lower and upper bounds on edges discussed in TUTORIAL *

$\Rightarrow$ Lower bound

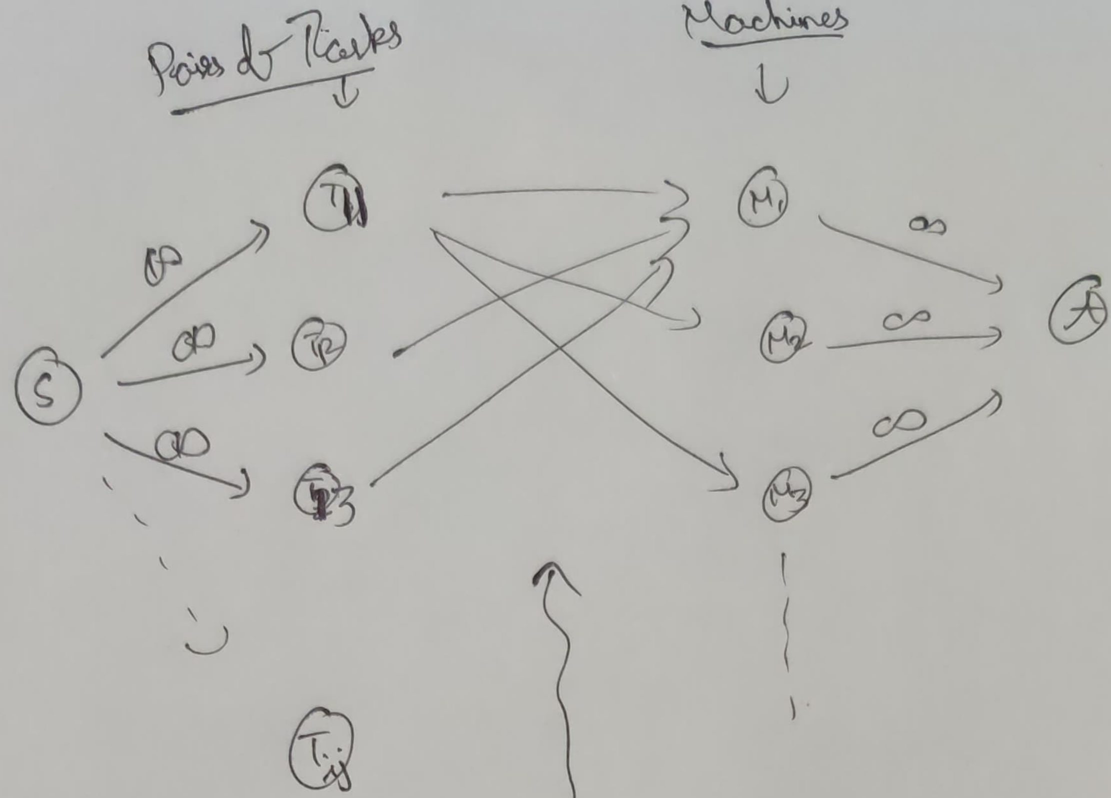
$\lfloor X[p][q] \rfloor$ ← floor

$\Rightarrow$ Upper bound

$\lceil X[p][q] \rceil$ ← ceil.

✓ The final flow from r_i to c_j gives value of Y[i][j]

A 6)



Costs

If T_{ii} cost $= C_i$

T_{ij} cost $= C_{ij} + P_{ij}$

if exists
else 0.

Find min flow