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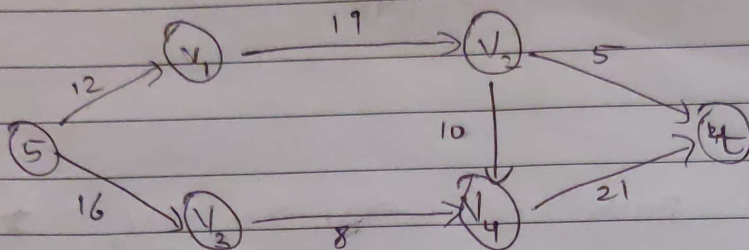
Semester: 5

Seat No: CS5A021

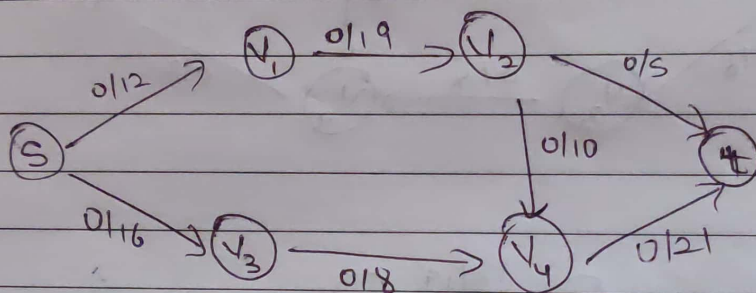
Pg No: 1/4, of Q3.

Sign: P. G. Kalani

c)-



Step 1: Initializing flow $f(u,v) = 0, v(u,v) \in E$



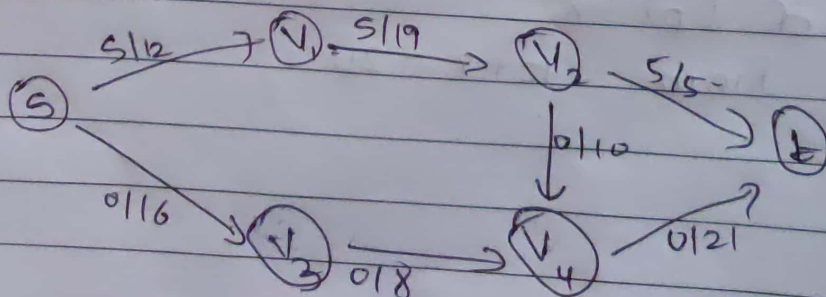
Step 2: Iterate until that exist augmenting path is residual graph.

Iteration: Augmented path.

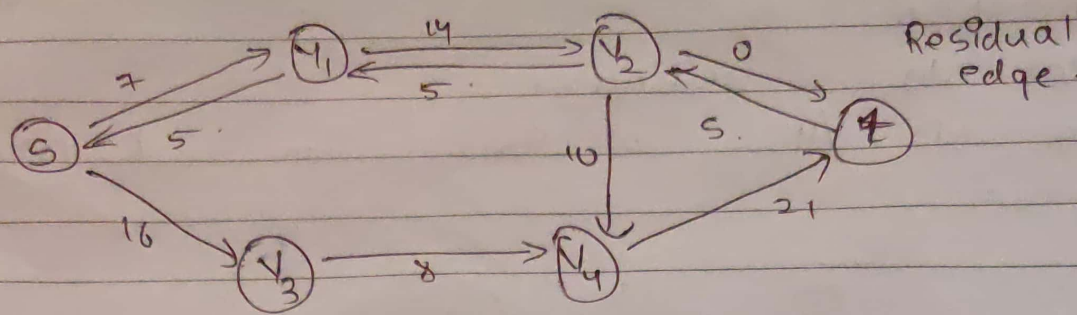
$S \rightarrow V_1 \rightarrow V_2 \rightarrow T$

$cf(p) = 5$

Total Flow (F) = 5

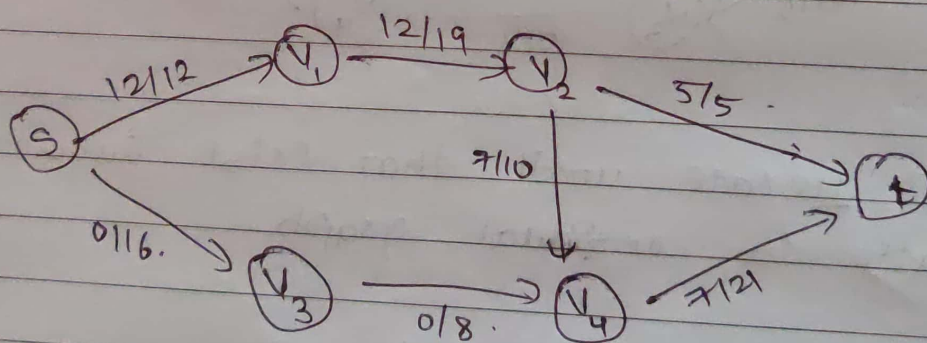
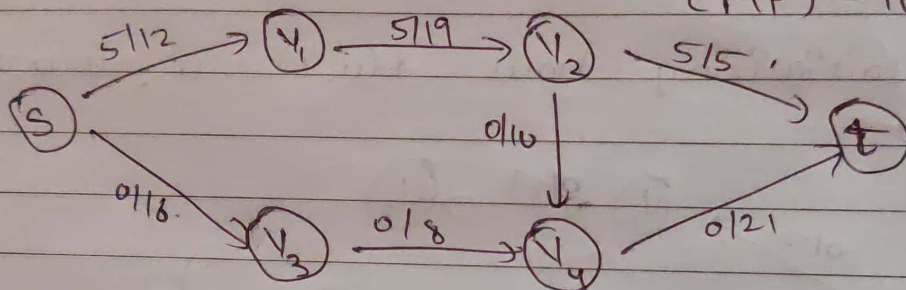


pg No = 214 of Q3. Sign = K.G. Palani



Iteration 2:

Augmented path $p: s \rightarrow v_1 \rightarrow v_2 \rightarrow v_4 \rightarrow t$
 $cf(p) = 10$

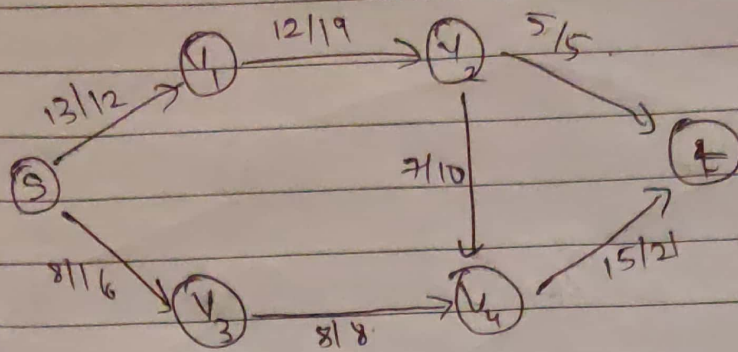


Iteration 3:

Augmented path $p: s \rightarrow v_3 \rightarrow v_4 \rightarrow t$
 $cf(p) = 8$

Total Flow = $12 + 8 = 20$

pg No = 3/4 of Q3 sign : K.G. Palani



No more augmented path,
Total flow = 20.

Q.3.

B. $T(n) = T(n/4) + T(n/2) + cn^2$

Using recursion method.

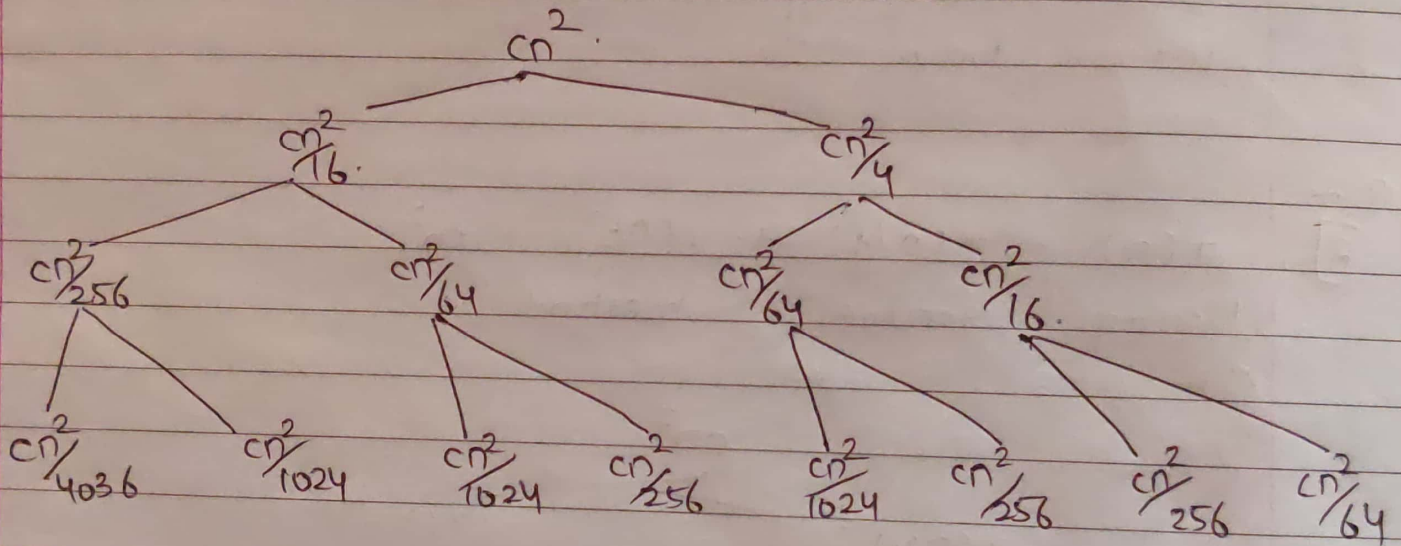
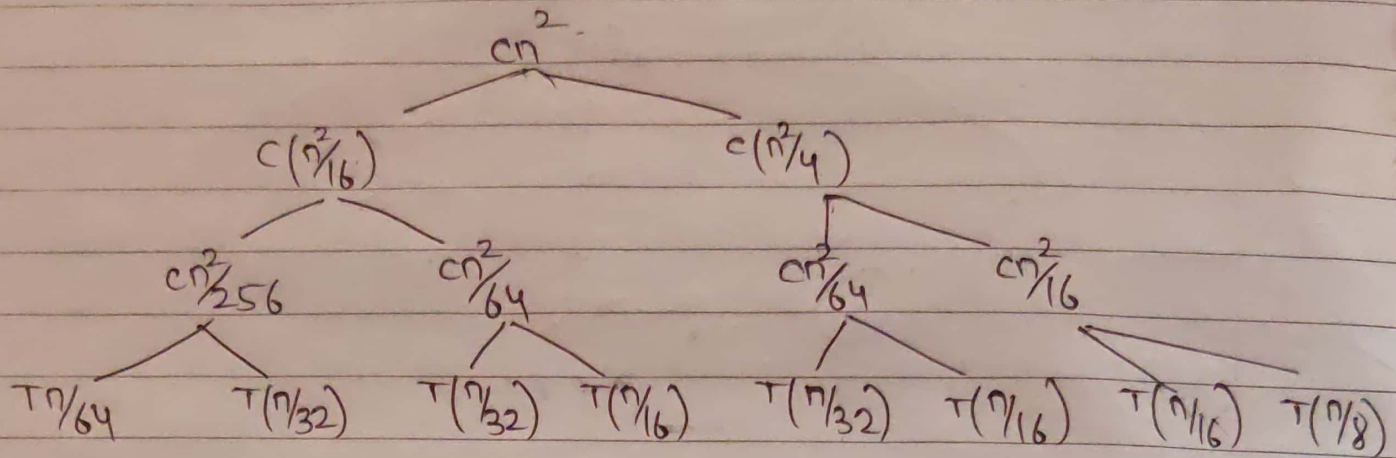
$$\begin{array}{c} cn^2 \\ \swarrow \quad \searrow \\ T(n/4) \quad T(n/2) \end{array}$$

$$\begin{array}{c} cn^2 \\ \swarrow \quad \searrow \\ c(n/4)^2 \quad c(n/2)^2 \end{array}$$

$$\begin{array}{c} cn^2 \\ \swarrow \quad \searrow \\ \begin{array}{c} (n^2/16) \\ \swarrow \quad \searrow \\ T(n/16) \quad T(n/8) \end{array} \quad \begin{array}{c} (n^2/4) \\ \swarrow \quad \searrow \\ T(n/8) \quad T(n/4) \end{array} \end{array}$$

P.T.O.

pg No: 4/4 of Q3. sign = K.G. (above)



If we sum above tree level by level, we get the following.

$$T(n) = cn^2 + \frac{5}{16}cn^2 + \frac{25}{256}cn^2 + \dots$$

$$= cn^2 \left(1 + \frac{5}{16} + \left(\frac{5}{16}\right)^2 + \left(\frac{5}{16}\right)^3 + \dots \right)$$

$$= cn^2 \left(\frac{1}{1 - \frac{5}{16}} \right)$$

$$\text{Workdone} = O(n^2)$$