CRITICAL PATH METHOD

1. Critical path method is an activity based network method
2. This is generally used for repetative type of project for which accurate estimate of time can be made.
3. It is based on determinastic approch.
4. Only one time estimate is for each activity.

IN CPM METHOD

(a) Event time

(b) Activity time

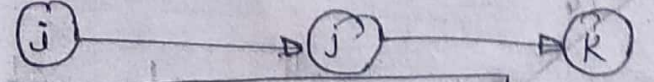
(a) Event time

(i) T_E = Earliest - occurance time

$$T_E^j = T_E^i + te^{i-j}$$

(OR) $T_{E\,\text{Successor Event}} = [(T_E)_{\text{predeccessor Event}} + \text{Activity duration}]_{\max}$

(ii) T_L = Latest Allowable occurance time

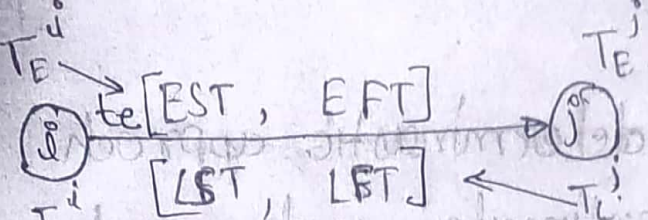


$$T_L^{j'} = (T_L^k - te^{j'-k})$$

(OR) $(T_L)_{\text{Predeccessor Event}} = [(T_L)_{\text{Successor Event}} - \text{Activity duration}]_{\min}$

Activity time

① EST → Earliest start time
② EFT → Earliest finish time
③ LST → Latest start time
④ LFT → Latest finish time



T_E^j = EST $= (T_E)^i$ EST + Duration = EFT

T_L^j = LFT $= (T_L)^j$ LFT − Duration = LST

In given Ex. for Activity [i-j]

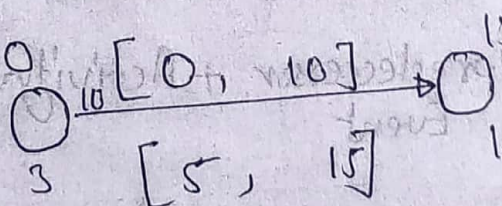
① EST $= T_E^i$ = Earlist occurance time of "Tail Event".

② EFT $= (T_E^i + te^{i-j})$ = (Earliest occurance time of Tail event) + (Activity duration)

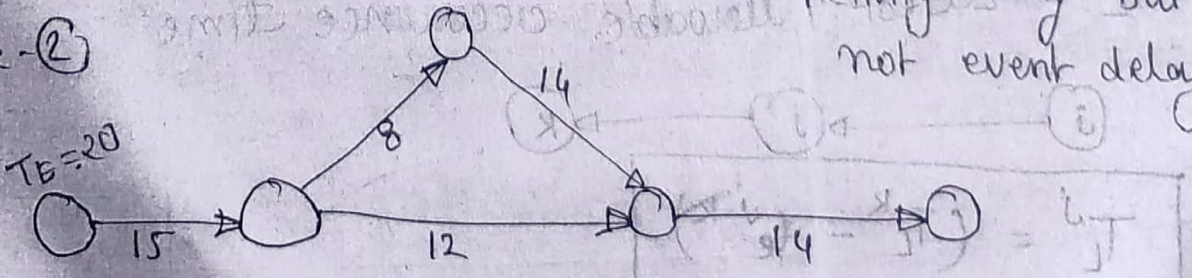
③ LST $= (T_L^j - te^{i-j})$ = (Latest occurance time of Tail event) − (Activity duration)

④ LFT $= T_L^j$ = Latest finish time of Head Event

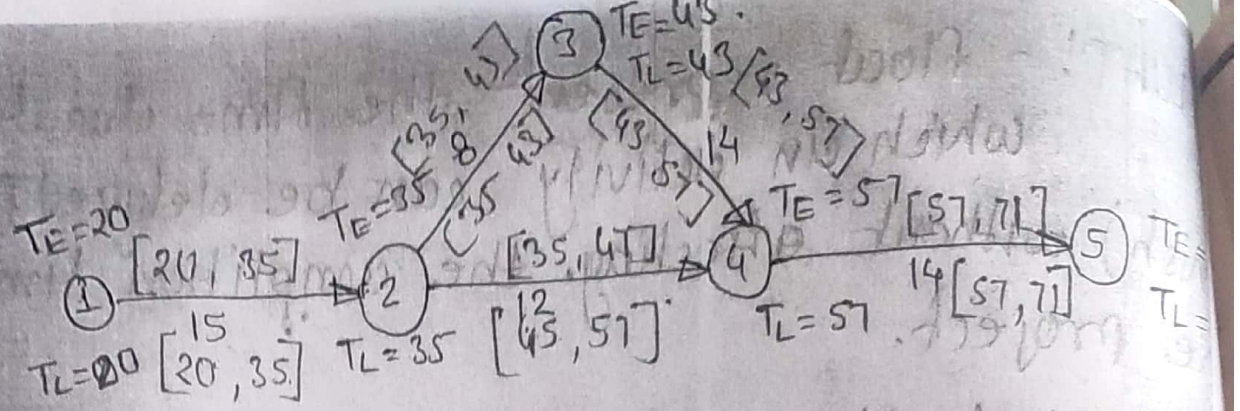
Ex-①



Ex-②

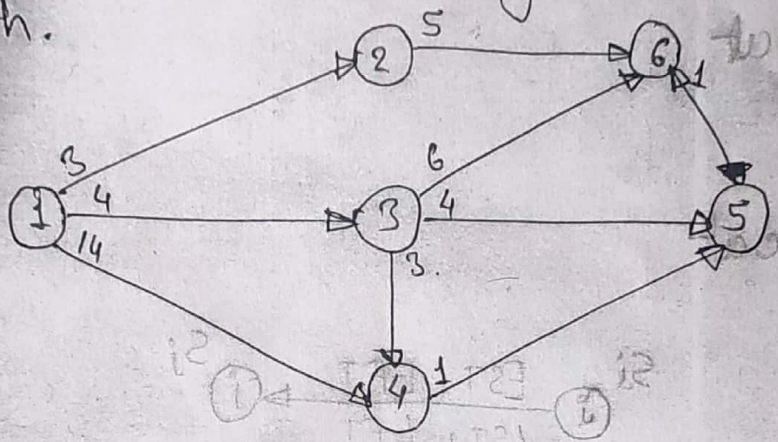


Activity delay but not event delay.



Question

The Network shown in the fig. has the estimated duration of each activity. Determine the total float for each activity and stablish the critical path.



Total float

$$F_T = (LST - EST) = (LFT - EFT)$$

Note:- if $F_T = 0$ Activity is critical

* Critical Activity can not be delayed.
* Critical path:- Having all activities with total float = 0

Activity	te	EST	EFT	LST	LFT	FT	Remarks