[PERT] PROGRAM EVALUATION RIVIEW TECHN

① PERT is an event oriented Network that wa developed by U.S Navy.

② It is used in those type of project in which precise determination of time can't be made such as →

(a) R.N.D (Research and development)
(b) Non-(Repeatative type project)

③ It is based on provabilistic approch.

④ Cost of the project is directly proportional to time.

Time Estimate:- In order to acount the uncertai in the completion time of activiti There is three time estimates in PERT Netwo

① Optimistic time [t_o]:- It is the minimum ti in which activity may be expected to be completed under most ideal condition.

② Pessimistic time [t_p] :- It is the maximum time in which an acti may be expected to be completed under most adverse condition.

3) Most likely time (tm) :- It is the time in which the activity is normally completed under normal condition.

Note :- ① In a project their may be many activities. In PERT Network probability distribution curve of each activity is β-distribution curve but for the entire project probability distribution curve is normal-distribution curve.

If symmetri curve then normal-distri.

If not symmetri curve then - β - dist.

DDD

2) Expected time / Mean Time of an Activity :- It is that time in which probability of complition of project is 50%.

$$t_e = \frac{t_o + 4t_m + t_p}{6}$$

DDD

3) Standard deviation of an Activity :-

$$\sigma = \frac{t_p - t_o}{6}$$

4) Variance of an Activity :- for uncertainity.

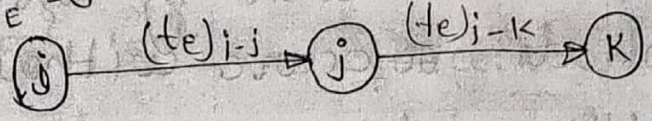
$$\text{Variance} = \sigma^2 = \left(\frac{t_p - t_o}{6}\right)^2$$

Variance represent the uncertainity of the complitio of project. Heigher value of variance represen more uncertainity

EVENT TIME

① EARLIAST EXPECTED TIME :- This is the minim time in which the eve may occur. An event occurs only when all th predeccessor activity are completed.

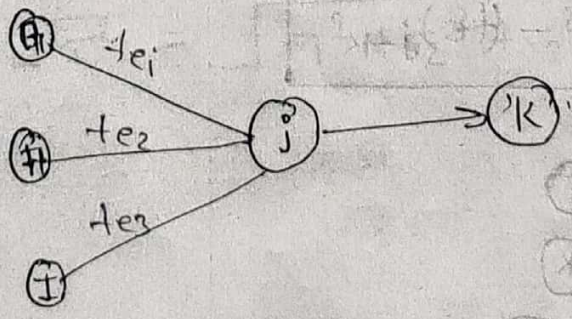
Ex :- ① $T_E^i = 0$



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

$$(T_E)_{\text{successor Event}} = (T_E)_{\text{predeccessor event}} + \text{Activity duration}$$

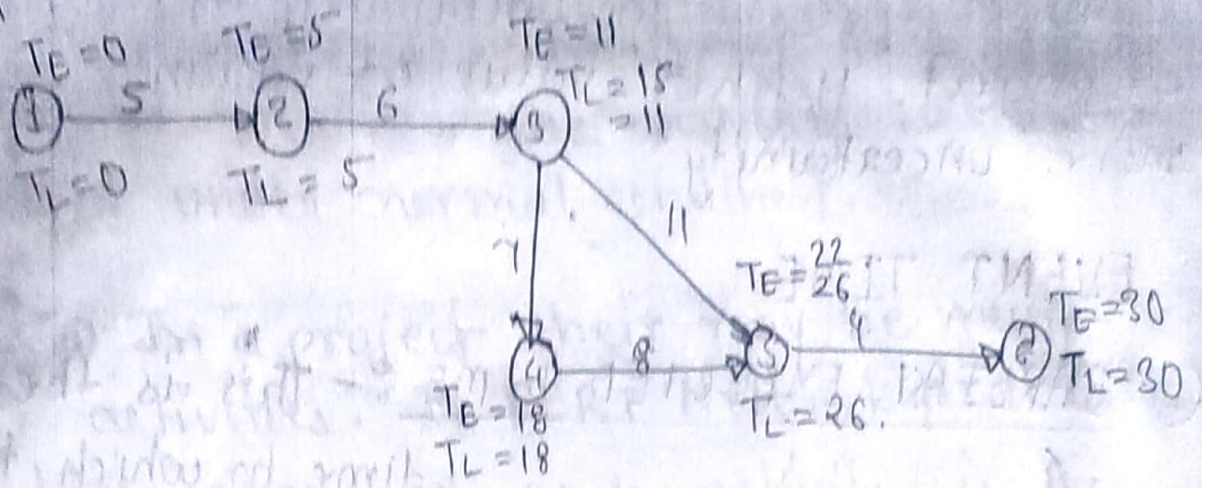
So $T_E^K = T_E^j + (te)_{j-K}$



$$(T_E^j) = \left[(T_E)_{\text{predeccessor event}} + \text{Activity Duration}\right]_{\max}$$

So, $T_E^j = T_E^G + (te)_{G-j}$ or $T_E^H + (te)_{H-j}$ } maxi.

Question



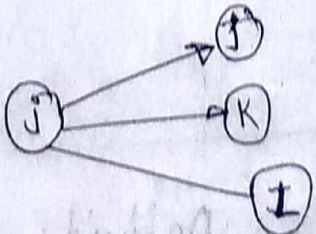
Latest Allowable Occurance time :- It is the maxi. time or latest time of an event by which an event may be allowed to occure without any delay in complition of project.

$$(T_L)_{\text{predecessor Event}} = (T_L)_{\text{successor Event}} - \text{Activity Duration}$$

Ex-1

$$(T_L)_j = (T_L)_K - (te)_{j-K}$$

Ex-2



$$(T_L)_i = T_L^j - (te)_{i-j}$$
$$\text{or } T_L^K - (te)_{i-K}$$
$$\text{or } T_L^L - (te)_{i-L}$$
} mini.